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Medicine

The Aetiology and Treatment of Chronic Pancreatitis, With Report of a Case*

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Pancreatic lesions are commoner than some people suspect. In one hospital, where blood amylase estimations are done as routine, 0.3% of all admissions during a fifteen-year period were found to be suffering from pancreatitis.¹⁴

The aetiology is not yet well understood. Many cases are confused clinically with gall bladder disease; and gall stones are thought to be a common cause of pancreatitis. It is supposed that stones obstruct both biliary and pancreatic ducts and cause reflux of digestive juices and necrosis, but it is doubtful whether this often occurs. According to Hicken,¹⁰ in only 30 out of 100 patients studied at post mortem was there a common channel; the remainder had a different papilla, or a different orifice for the two ducts. Certainly gall bladder surgery does not always cure pancreatitis, and pancreatic lesions sometimes account for the pain in the so-called "postcholecystectomy syndrome."

Alcoholism is often associated with pancreatitis. In some of the cases I have seen, the alcoholism seems to have been the result, and not the cause, of the pancreatitis, the patient taking to strong drink to soothe a pain dismissed by his doctor as a neurosis. While methyl alcohol has a direct toxic action upon the pancreas¹ the mechanism in the case of chronic alcoholics and ethyl alcohol is not clear. There does not seem to be any direct effect upon the glandular tissues; there is some suggestion that whisky causes spasm of the sphincter of Oddi and so gives rise to back pressure and reflux.⁶

Deficient diets can cause pancreatic lesions in experimental animals²⁰; and this is perhaps the way in which ethionine⁵ also produces it, in that it competes against methionine which is not then taken up. Pancreatitis also occurs in Kwashiorkor and may be reversible.¹⁸

It could be that the alcoholic gets pancreatitis for the same reason that he gets cirrhosis of the liver, and that fundamentally both conditions are end results of deficiency states. Stimson¹⁹ who reported on 300 autopsies, saw a very high incidence of chronic pancreatic disease in the group with liver cirrhosis, as compared with his control group.

Toxins may especially affect the pancreas, such as carbon tetra-chloride and zinc sulphate²⁰ and methyl alcohol has already been mentioned.

Pancreatitis is a known complication of mumps, and other viruses may be concerned. A Coxsackie virus, for instance, has an affinity for pancreatic tissues in experimental animals.⁴

Hendry has described intra-ductal papillomata which obstruct the main duct, and has offered this reason as an explanation of the relapsing nature and painful exacerbations, associated with a raised blood amylase, seen in some of the patients.⁹

Trauma can certainly cause pancreatic lesions, and this may be accidental and external, or surgical, especially in biliary tract and pyloric operations. Interference with pancreatic blood supply, increased viscosity of pancreatic secretion, bile reflux, obstruction, and manipulation of the gland itself, may be responsible.⁷

Finally a hereditary type of chronic pancreatitis, which has nothing to do with fibrocystic disease, has been described by Comfort.³

Clinical Picture

Two clinical characteristics are of interest.

In both cancer of the pancreas and chronic pancreatitis emotional upsets are common. Some of these may be due to the impact of a long and painful disease upon the mind, but pain cannot always be the cause, for I have seen cancer of the pancreas present as a persistent anxiety and depression in the absence of pain, and this effect is presumably due to the metabolic upset occasioned by the pancreatic dysfunction. The ease with which these people become morphine or demerol addicts is notorious, and the unhappy results of organic and somatic disease impinging on the psyche are worth stressing and remembering. It is well to suspect chronic pancreatic disease in anybody who is emotionally disturbed and complains of abdominal pain, although it may be more fashionable to refer the problem to a psychiatrist.

The pain of chronic pancreatitis tends to be more deep seated and more continuous in character than other abdominal pains. Experimental studies show that the pain from the head is referred to the right of the mid line from the level of the xiphoid to just below the umbilicus; from the body to the midline, and from the tail to the left midline from the xiphoid down to just above the groin. Radiation may occur to the back on the same side. With maximal stimulation, a band of pain passing across the abdomen is felt, with back

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radiation. The pain is often relieved by flexing the trunk, and may be worsened by lying straight in bed at night. This is probably because much of it comes from stretch or tension of a capsule involved in the chronic inflammatory process. A history of food relief is common, perhaps because stomach acidity is temporarily lessened and with it stimulation of pancreatic secretion, which may distend the capsule. It is not surprising that duodenal or gall bladder lesions are so frequently considered in these cases, and confusion with renal disease is not rare. Jaundice may be present and colour the trend of diagnostic thought. Some curious pictures may be seen. One man with chronic pancreatic disease presented as an orthopaedic problem, as he complained of painful aches in the shoulders and lumbo-sacral region, made worse, however, by lying flat and accompanied by weight loss. Another came into hospital with chronic generalized oedema, eventually proved to be due to malabsorption secondary to a degenerative pancreatic lesion.¹⁷

Treatment

It cannot be said that current methods of medical treatment offer much more than symptomatic relief. The dietary and alkali methods employed for peptic ulcer, which are directed towards neutralizing stomach acidity and so decreasing pancreatic secretion, are necessary. Aluminum hydroxide should not be used, however, as it interferes with phosphate absorption in these cases.⁸ Fat in the diet should be curtailed, especially if there is diarrhoea. An adequate protein and vitamin intake must be assured by supplements if necessary, and lipotropic substances are worth trying.

Enteric coated pancreatin is given to make up for deficiencies in external pancreatic secretion, but the amount usually prescribed is much too small. Up to 20 grams daily may be necessary. The cost of this may tax the patient's resources. Viokase, which tends to be less broken down in the stomach, is as good but just as expensive.² Other sources of proteolytic enzymes are available and while they are not as effective they may be used to supplement pancreatin and reduce the amount required. Fresh figs, and frozen pineapple slices contain these enzymes, and there is a "meat tenderizer" readily available in the food stores which contains papaya extract. There are also purified papain preparations for sale which are comparatively cheap. I have not been impressed with the value of emulsifying agents such as Tween and no longer use them.

The anti-cholinergics, while valuable in the acute inflammations for "splinting" the pancreas, in my experience are disappointing in the chronic relapsing disease. When taken by mouth, their effect upon stomach acidity is unreliable, and they

seem to do little towards easing the pain of chronic pancreatitis, while their constipating tendencies do not help and their paralyzing actions on the small bowel may further impair absorption.

Pain relief is the great problem, and while it can be met by Demerol or morphine, addiction is only too likely, and this is why the physician, hesitant to use these drugs, eventually comes to ask his surgical colleague for help in dealing with the problem. With nothing settled regarding the aetiology of the condition, it is not surprising that a variety of surgical procedures are used.

One type of attack is based on the common channel theory, and aims at preventing biliary or pancreatic reflux into the pancreas. Sphincterotomy of the sphincter of Oddi, either by the transduodenal route or by the external method which is similar to Ramstedt's operation upon the pylorus, is perhaps the approach most favored. The gall bladder should be left alone unless it is diseased, when cholecystectomy and prolonged T-tube drainage is advocated. These methods may fail, understandably so in view of the many possible causes of the disease.

The lessening of gastric acidity, in order to avoid stimulation of the pancreas by acid chyme, forms the rationale of gastric resection,¹⁸ often combined with vagotomy, practised by some surgeons. The vagotomy, besides helping to reduce stomach acidity, may also depress pancreatic function to a variable extent, and so account for some part of the good results claimed.

The French school are great believers in splenectomy, because they feel it favorably influences the course of the inflammation, and Mallet-Guy¹³ has reported improvement in 70% of people who have undergone this operation. Most workers seem to believe that the procedure helps only because the nerve section tends to reduce pain, and many are not so enthusiastic about the results as are Mallet-Guy and his associates.

Finally there is always pancreatectomy—a formidable operation at the best of times but made doubly difficult by long continued inflammation, fibrosis and adhesions, processes which may completely mask the architecture of the abdominal cavity. The pain may be so terrifying, however, and the cry for relief so clamant, that this is sometimes done when all else has failed. If the patient survives, he may afterwards manage surprisingly well. The insulin requirements are moderate, around 50 units a day, and up to 83% fat absorption may be achieved by the exhibition of sufficient quantities of active pancreatin.²¹

As there are four so very different techniques for dealing with the problem surgically, most of us will regard the more enthusiastic claims for this or that procedure with great caution, and will feel that the surgical approach is still largely experimental, except that there is a strong case for

removal of calculi, when they are present, or for sphincterotomy, when dyskinesia of the sphincter of Oddi can be demonstrated.

Deep X-ray Therapy—Report of a Case

Rauch¹⁵ found that x-ray in a dosage of 800 to 1600 R units applied externally decreased pancreatic secretion in dogs, and it would seem logical to try this therapy, in chronic pancreatitis with the idea of reducing pancreatic activity and relieving pain. Recently an opportunity arose to use this treatment in the case of a 51-year-old male, who was presented at the St. Boniface ward rounds in January of this year as a problem in management.

He commenced to have attacks of central upper abdominal pain radiating to the right costal margin in 1951. The pain was relieved by food, but came on again 1½ hours after his meals, and was particularly severe at night. At first the trouble occurred in the winter and the fall, but later became pretty continuous the whole year round, more severe in character, and spread to involve the whole front of the upper abdomen, with radiation to the back at the right shoulder blade, and also downwards towards the right groin.

At quite an early stage, postural relief was described, and the deep dull character of the pain noted. Gall bladder disease, hiatus hernia, peptic ulcer, and renal disease were all considered as causes and eliminated by investigation, but kidney trouble was so simulated that surveys of the urogenital tract including retrograde pyelography were done on three separate occasions.

The patient took to whisky drinking in an effort to dissipate his troubles, but he found that although he could soak himself into a stupor and forget the pain for a while, it returned with redoubled vigor when the effects of the bout had worn off.

Laparotomy in February, 1953, showed a hard pancreas and biopsy demonstrated that chronic pancreatitis was present.

Later that year, at a second operation the appendix and gall bladder, which contained fine sand but no calculi, was removed. Sphincterotomy was also done and T-tube drainage instituted for the next two months.

He continued to suffer severe pain and when he was shown at ward rounds pancreatectomy was considered but thought impracticable, owing to the inherent difficulties of the operation and his poor general health. It was therefore decided to observe the effect of deep x-ray therapy upon the level of his serum amylase, which since the beginning of his illness had never fallen below 200 units. For 13 days a dosage of 1260 R units was

directed to the front of his abdomen and his serum amylase estimated every other day.

For the first week no change in his clinical condition or in his serum amylase level was recorded, but during the second week of x-ray therapy his pain lessened in intensity and finally disappeared, and his serum amylase fell from 220 units to 35 units.

Two months later, after his discharge from hospital, his general condition was very encouraging. He had gained strength and 14 pounds in weight. Minor attacks of pain occurred from time to time, but these did not trouble him much and were easily controlled by two tablets of veganin. His serum amylase had climbed again, however, to 180 units, and this suggested that the improvement was transient and that a more intensive course of therapy would become necessary at some future date.

No conclusions can be drawn from one isolated case, but perhaps deep x-ray therapy is worth testing out by further trials, especially when lesser measures having proved unsuccessful, pancreatectomy is contemplated.

Summary

Current theories as to the cause of chronic pancreatitis are discussed. Treatments should be based on a more precise understanding of the many possible aetiological factors. Deep x-ray therapy is worth a trial in intractable cases faced with pancreatectomy.

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Medicine

Virology of Poliomyelitis*

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Despite the increasing knowledge of poliomyelitis viruses, unanswered or partially answered problems still remain to be solved. Many theories, some contradictory, are based on the results of animal experimentation; but results obtained from such animal experimentation are not always completely applicable to the disease in the human being.

As a result of the intricacy and expense of the required technical procedures, research in virology has heretofore necessarily been confined to especially equipped virus laboratories. Within the past year or so, however, further developments in technical procedures, notably the growth of viruses in tissue cultures, have brought certain applied phases of the investigation of poliomyelitis and other viral infections within the scope of smaller laboratories. Previously many investigations were confined to animal experimentation and were on a small scale; much of this type of research can now be carried out on a large scale on the human patient during and after an epidemic. Such a type of investigation should be of value in clarifying the status of some existing theories, and may alter considerably some of the present concepts of the virology of poliomyelitis.

The actual site of entry and mode of dissemination of the virus in the body has been partially determined. This particular problem has been studied for many years by Faber, who lists a number of possible portals of entry—the olfactory area, the nose, the pharynx, the tracheo-bronchial tree, the esophagus, stomach, small intestine, colon and rectum.

Faber's conclusions, based largely on findings from human autopsy material show that entry is possible through the mucous membrane of any of these organs; the most common portal however appears to be the mucous membrane of the pharynx. The virus when deposited on the mucous membrane enters superficially located peripheral nerve endings, as a rule the fifth cranial and ascends by axons to peripheral ganglia and the central nervous system. Once established in the central nervous system multiplication of the virus takes place, followed by the characteristic lesions of the disease.

An alternative and possible contradictory theory of the manner by which the virus spreads in the body has been postulated. This theory has

recently gained impetus from the hypothesis of Bodian that virus multiplication first occurs in the alimentary mucosa, followed then by an invasion of the blood stream and a viremia; during the viremia the most significant deposition of virus is in the central nervous system where it multiplies and produces the disease.

With our present knowledge it is impossible to state which of these apparently contradictory theories is correct; it is not inconceivable that in man, both methods of invasion and spread of the virus occur, and the two theories may therefore not be mutually exclusive.

Following the initial invasion a tremendous multiplication of the organisms must occur at some site within the body before disease is produced.

The greatest increase in organisms is considered to take place in the central nervous system but other sites must receive consideration. It is possible that some proliferation occurs in the mucous membrane of the respiratory or the gastro intestinal tract prior to invasion of the central nervous system. It is also possible that proliferation may occur in the regional lymph nodes or the ganglia, to be followed by a second and more significant phase of multiplication in the central nervous system.

Factors Determining Outcome of Exposure

During an epidemic of poliomyelitis it is obvious that certain conditions other than simple exposure to virus determines the final outcome in any individual case. Following exposure to virus some individuals develop extensive disease, some develop **limit** disease and others become asymptomatic carriers of the virus. The eventual outcome in any case is apparently dependent largely upon variations existing in the host and the parasite.

Factors Related to Host

The most important factors for the determination of the outcome of an exposure are probably in the host; these include the natural resistance offered by the skin and the secretions of the mucous membranes; of more significance is the presence of naturally acquired antibodies in the host. Studies of antibody content of individuals in an average community disclose that the serum of approximately 80 per cent of persons 20 years of age and over contains neutralizing antibodies to poliomyelitis virus. Over a period of years this figure varies in different communities and even in the same community: a recent epidemic of poliomyelitis in a community postulates a larger proportion of immunized persons in that community; the converse also obtains.

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Factors Relating to Virus

During an epidemic of poliomyelitis the virus is widespread in the community, yet of those exposed only a fraction develop the disease even when all are equally challenged with the virus. This suggests that the specific immunity of the exposed individual has a more important bearing on the final outcome than the virulence of the organism. There are, however, factors pertaining to the parasite that have a definite bearing on the result of an exposure.

Probably the most important single variation connected with the parasite is the size of the dose to which the host is challenged. For example an immunized individual challenged with a massive dose may develop poliomyelitis, whereas a non-immunized person challenged with a small dose may not contract the disease. It is impossible to assess the size of the challenging dose received by any individual; the hypothesis, however, is supported as the result of animal experimentation.

Strains of virus of one particular type, i.e.: Brunhilde, possess an identical antigenic constitution common to all, but differing from the antigenic constitution of other types of poliomyelitis viruses, i.e.: Leon and Lansing. Following exposure to one type of virus no cross immunity to other types develops.

The introduction of a different type of poliomyelitis virus into a community in place of one to which that community was immunized could result in an epidemic which might include those actively immunized as well as those persons with no immunity. Since one type of virus (Brunhilde) is responsible for practically all poliomyelitis epidemics this factor is fortunately not too important in the production of epidemic poliomyelitis.

It has been considered that an enhancement of the virulence of an organism already present in a community could be responsible for development of the disease in a larger proportion of the population than anticipated. This theory has received little support in recent years.

Recently "interference effects" between viruses have been observed, i.e.: the tendency of certain viruses when mixed to neutralize each other. This condition has been postulated to exist between the Coxsackie group of viruses and the poliomyelitis viruses, since in some mild cases of poliomyelitis both viruses have been isolated from the feces of the patient. The widespread natural occurrence of both viruses in feces, in disease and health renders this hypothesis untenable.

In epidemic years a consistency of atmospheric conditions (temperature and humidity) has been observed. The relationship of epidemics to atmospheric conditions may be the result of an associated alteration in the infectivity of the organism.

Many conditions other than those related to the virus or the host are suspected of having an effect on the outcome of exposure. Poliomyelitis has apparently an increased incidence following tonsillectomy, severe muscular exertion, preventive inoculations or during a pregnancy. These conditions may be associated with a decrease in body mechanisms; certainly a breaking down of local tissue resistance accompanies a tonsillectomy.

In an endeavour to identify the etiological agent of poliomyelitis many different agents have been implicated; the relationship in some cases is a coincidental development of poliomyelitis following contact with an agent having no relation to the disease. Some factors such as nutritional deficiencies have also been incriminated; although not a direct etiological agent poor nutrition may have an influence on the outcome of an exposure as a result of the associated deficient immune mechanism.

Excretion of Virus

The virus is excreted in the feces of poliomyelitis patients and also from symptomless carriers; feces are considered to be the most heavily contaminated source of supply for virus isolation. The feces are most heavily contaminated within the first 7 to 10 days following onset of illness; the virus concentration then gradually decreases and has usually disappeared from the feces by the end of the 4th week. A few patients may still excrete virus at the end of two months.

During the first few days following onset of symptoms the virus can be isolated from the oral pharynx of patients and from symptomless carriers. During this stage coughing and sneezing by the patient may cause infection of others.

The Virus

The virus of poliomyelitis has been demonstrated with the electron microscope; measurements by electron microscope, ultra filtration and by centrifugation show the size of the virus to be 10 to 15 millimicrons. Propagation of virus recovered from human beings can only be carried out in monkeys, an exception is the Lansing type, which is also pathogenic for mice. The Brunhilde and Leon types of virus have now been adapted to mouse passage, enabling mice to be used for neutralization tests, the patient's serum being the unknown component.

Three antigenic types of poliomyelitis virus are recognized; the Brunhilde (Type 1), Lansing (Type 2) and Leon (Type 3). Each of the three types is composed of a number of different strains—for example 10 common strains are found in the Brunhilde type; in the Lansing 7 common strains and 2 common strains only in the Leon type. In an epidemic, the Brunhilde type is found in 85 per cent of the cases, the Lansing in 12 per cent and the Leon in 3 per cent. As a general rule the

Lansing and Leon types of poliomyelitis virus are associated with sporadic cases of the disease; however the Leon type was recovered from a large percentage of the cases in a recent epidemic of poliomyelitis in Boston.

Laboratory procedures for the identification of poliomyelitis can be classified in principle as follows:

1. **Isolation of Virus**—obtained from bacteria free feces or autopsy material.

All types of virus—intracerebral inoculation of monkeys

or

Lansing type only—inoculation of mice

or

All types of viruses—inoculation of tissue cultures.

The presence of virus in feces or autopsy material is indicated by production of the characteristic disease in the inoculated animal; when tissue culture is used for the test disintegration of cells indicates the presence of virus.

2. Identification of Virus

Three monkey (or tissue cultures) will be required for each test.

- a) Brunhilde antiserum is inoculated into the first monkey; the second monkey receives Lansing antiserum and the third Leon antiserum.
- b) Each animal (or tissue culture) is then inoculated with a suspension of the virus to be identified.

Interpretation:

Neutralization of the virus will occur in the presence of its corresponding specific antiserum; the inoculated monkey (or tissue culture) will remain unaffected. The remaining monkeys, etc., will become infected with the specific inoculated virus.

3. Serum Antibody Studies

For this study either three monkeys, tissue cultures, or mice will be required.

- a) Each animal (or tissue culture) is inoculated with the serum to be tested.
- b) The first animal (or tissue culture) is then given an intracerebral inoculation of the Brunhilde type virus; the second receives the Lansing type; the third is given the Leon type virus.

In one of the inoculated animals (or tissue cultures) neutralization of the virus will occur; infection will develop in the remaining pair.

Should mice be used for this study it is necessary to substitute virus strains especially adapted to mouse passage.

Evaluation of Laboratory Tests

Typing a specific strain of virus is of particular value in epidemiology and the contribution of the laboratory benefits the community rather than the

individual patient. During an inter-epidemic period studies of antibody content are also of value to the community as a means of revealing the relative immune status of that community. When an epidemic occurs in a community, isolation and typing of the virus might determine the specific vaccine or gamma globulin most satisfactory for use.

Special studies for the presence of serum antibodies in different population groups has demonstrated the universal prevalence of polio viruses throughout the world. These studies indicated that an active immunity against poliomyelitis has developed in about 40 per cent of children by an age of 4 years; at 10 years of age specific poliomyelitis antibodies are found in about 60 per cent of children; in persons 15 years of age or older this increases to 75 per cent. As the Lansing virus alone has been used as the known component in world wide neutralization tests, the conclusion is reached that anti-Lansing antibodies are of world wide distribution, the presence of anti-Brunhilde and anti-Leon antibodies being implied only. The recent development of tissue culture methods and the use of mouse adapted strains of poliomyelitis virus will enable these investigations to be carried out on a much larger scale in the near future, such investigations may change the concept of poliomyelitis.

The use of pooled processed serum (gamma globulin) for the possible prevention of poliomyelitis is based upon the recognized widespread occurrence of anti-Lansing antibodies in the general population. The quantity and quality of neutralizing antibodies in pooled serum is dependent largely upon the length of time between an epidemic in a community and collection of blood in that district. Relatively large amounts of Brunhilde neutralizing antibodies will be present in the blood of donors in a community following a recent epidemic of poliomyelitis caused by that specific virus; whereas in a similar community with a low incidence of poliomyelitis the neutralizing antibodies in the blood of donors in that district will probably be correspondingly low. Since gamma globulin is obtained from districts having both a high and a low incidence of poliomyelitis it would appear that the antibody content of pooled serum may not be entirely effective in the prevention of poliomyelitis.

A critical and as yet unanswered question regarding the widespread use of gamma globulin is whether development of an active immunity is prevented during the period of passive immunization following the use of gamma globulin. If an active immunity does not develop, or is prevented from developing during the period of passive immunization the value of gamma globulin would appear to be decreased.

During the past two years progress has been

reported in the preparation of a polyvalent poliomyelitis vaccine which contains representative strains of each of the three types of poliomyelitis virus. Monkeys have been inoculated with the vaccine and when these animals were subsequently challenged with relatively large doses of each type of virulent poliomyelitis virus an excellent active immunity was demonstrated. Subsequent to animal experimentation the vaccine was also given to a small number of human volunteers, with apparently no untoward reaction.

However since with human volunteers it is impossible to test immune status with a challenging dose of the specific virus, assessment of the value of such immunization will be delayed until statistical findings of a large number of persons thus immunized can be evaluated. Immunization of groups of the population is already underway; if such active immunization is as effective in human beings as it has proved to be in animals, the status of poliomyelitis as one of the major crippling diseases will be radically changed.

Laryngology

The Indications for Tracheotomy

Wm. K. Sterin*

The value of tracheotomy in overcoming obstructing lesions of the upper respiratory tract has been recognized since the time of Asclepiades of Bithynia (about 90 B.C.).¹ The operation, however, was regarded as being very dangerous and was only performed under exceptional circumstances until the 19th century. Since then, with advances in medicine, the indications for tracheotomy have become broadened in scope.

The basic pathological picture in upper respiratory obstructions consists of diminution in the caliber of the airway which may lead to asphyxiation. The characteristic signs and symptoms associated with obstructive dyspnea are (a) labored, stridulous breathing; (b) retraction of the suprasternal notch, supraclavicular fossa and intercostal spaces; (c) restlessness, apprehension and inability to sleep, and (d) an ashen gray color or cyanosis. The role of tracheotomy here, is simply to bypass the obstruction. The indications for tracheotomy in upper respiratory obstruction are classified by Thomson and Negus² as follows:

1. Certain injuries about the head and neck obstructing the airways.
2. Temporary obstruction of the glottis caused by edema from
 - (a) foreign bodies in the trachea,
 - (b) diphtheria,
 - (c) other types of acute laryngo-tracheo-bronchitis.
3. Stenosis of Larynx or Trachea
 - (a) external compression, e.g. goitre, aneurysm, neoplasms,
 - (b) prolonged internal constriction,
 1. inflammatory swelling due to tuberculosis or syphilis.
 2. neoplasms of larynx.
 - (c) cicatricial narrowing caused by
 1. perichondritis and healing ulcers in

larynx and trachea.

2. after surgical procedures.

- (d) congenital webs in the larynx,
- (e) double abductor paralysis.

4. Paralysis of muscles of soft palate; and pharynx, causing pooling of secretions and inability to swallow, as in poliomyelitis and encephalitis.
5. (a) as a preliminary procedure to operations on the upper air passages, so as to prevent the descent of blood into the bronchi, and if necessary to insufflate anaesthetic agents.
- (b) following these operations, to supply air to the patients.
6. Supraglottic obstruction,
 - (a) swelling of aryepiglottic folds,
 - (b) pharyngeal neoplasms.

In recent years the indications for tracheotomy have been broadened to include conditions which are characterized by obstruction of the lower respiratory passages and may be designated as "secretory obstruction." The object in these cases is twofold: (a) the removal of the obstructing secretions from the tracheobronchial tree and (b) the prevention of pulmonary complications and asphyxia.

The basic pathologic process involved in secretory obstruction is the failure of the cough mechanism³ which normally clears the respiratory passages of accumulated secretions. This may result from coma or severe general debility; from depression or destruction of the respiratory centre in the medulla; from anaesthesia of the larynx; from paralysis of the diaphragm or intercostal muscles; and from fractures of the ribs or cervical spine.

The results of secretory obstruction are the same regardless of etiology and present characteristic, local and systemic signs. Locally, obstruction consists of accumulated material together with edema, spasm of bronchioles and scattered areas of atelectasis which pave the way for bronchopneumonia. Sufficient accumulated fluid may eventually cause the patient to "drown in his own secretions."

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Systemically, secretory obstruction contributes to hypoventilation and its associated biochemical changes in the blood which eventually terminates in asphyxia and death.

It has been shown⁴ that there are three components contributing to asphyxia; namely anoxemia, hypercapnia and acidemia.

1. **Anoxemia** is the direct result of the reduced gaseous exchange in the alveoli and is manifest by an increase in capillary permeability, pulmonary edema, and damage to the central nervous system and cardiac tissue. After three to eight minutes of anoxia, irreversible changes occur with symptoms of twitchings, convulsions or mental aberrations.

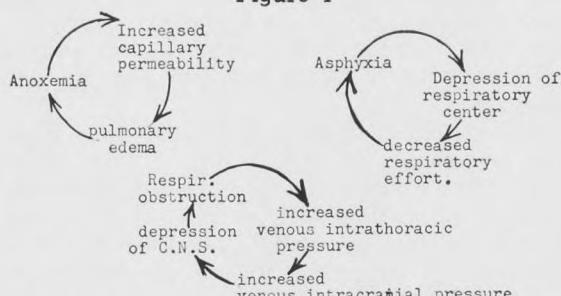
2. **Hypercapnia**. Because of the greater molecular weight of carbon dioxide, this gas diffuses less readily than oxygen and is thus retained in the blood. The signs and symptoms of hypercapnia may vary from headache, restlessness and disorientation, to coma and respiratory depression.

3. **Acidemia** stems from two related factors:

- (a) Carbon dioxide is retained in the blood as free carbonic acid. Since the pH of the blood depends largely on the equilibrium between free and combined carbonic acid, any excess of the former causes a gradual shift to acid levels, causing a respiratory acidosis.
- (b) A metabolic acidosis occurs when there is an excess production of lactic acid in the tissues due to severe anoxemia.

The combination of these various factors contributes one to the other, forming vicious cycles (figure 1.) which, if not treated adequately, will terminate in asphyxia and death.

Figure 1



In the management of these cases, Von Leden⁵ points out that while the administration of oxygen plays an important part in the treatment of any respiratory disorder, it is of no value in reversing the hypercapnia and acidosis. The administration of carbon dioxide is plainly harmful. While the use of sedation may seem desirable to combat the patient's agitation and restlessness, it should never be used since it tends to depress a failing respiratory effort even further.

In recent years there has been a growing conviction on the part of many investigators that the

only successful method of dealing with secretory obstruction is the removal of obstructing secretions from the respiratory passages and the establishment of normal ventilation. This may be achieved by three possible methods:

1. **Aspiration by bronchoscopy** is the method of choice in cases of mild secretory obstruction in which a single evacuation of the respiratory passages produces the desired effect. It is, however, contra-indicated in more severe forms of secretory obstruction which require frequent aspirations.

2. **Endotracheal intubation**⁵ is an effective method of dealing with an acute respiratory emergency. It allows for resuscitation using oxygen administered from an anaesthesia machine for suctioning of secretions below the obstruction and for time to prepare for an orderly surgical tracheotomy, if it should be required. Since intubation is irritating to the mucosa and is extremely uncomfortable, it should only be used as an interim procedure.

3. **Tracheotomy**, in the opinion of Von Ledden⁶, "is the treatment of choice for all critically ill patients and whenever repeated aspirations appear probable." He gives the following reasons for this view: (a) it bypasses any obstruction of the upper respiratory tract; (b) it permits easy and continued aspiration of the lower part by untrained personnel; (c) it facilitates removal of crusts and tenacious secretions by irrigation; (d) it relieves the exhaustion of the patient; (e) it eliminates the necessity of repeated bronchoscopic aspirations; (f) it provides a short cut, thus decreasing the dead space of the respiratory tract by about 50% and permits the delivery of fresh air or oxygen directly to the lower respiratory tract.

These principles have found application in the management of many diversified disorders which have one common factor of secretory obstruction.

I. Poliomyelitis

It has been shown^{6, 7} that bulbar and bulbo-spinal forms of acute anterior poliomyelitis, while characterized by the most severe and dangerous effects in the acute phase, if recovery occurs, cause little or no chronic disability. However, it is this type of involvement which leads to most poliomyelitis deaths. The majority of these deaths are due to pulmonary complications. The problem in these cases then is to preserve life through the dangerous stage by the prevention of pulmonary difficulties.

The first direct attack on this problem was reported by Durand⁸ in 1929. He advocated "postural drainage," and his results were encouraging. The use of tracheotomy in the management of poliomyelitis was first reported by Wilson in 1931, but in the ensuing 15 years only a few cases were reported in which the procedure was employed. It was not until the Minnesota epidemic

of 1946 that the indications for tracheotomy in poliomyelitis became more widely recognized.

Galloway¹⁰ gives the following outline of indications for the use of tracheotomy in the management of acute poliomyelitis based on symptomatology and findings:

1. Progressive anoxia with secretions in the upper airway;
2. Unconsciousness of pronounced restlessness in a patient who does not respond to other treatment in a few minutes;
3. Pronounced restlessness or stupor in a patient in a respirator, even if the paralysis is apparently of a spinal type;
4. Fluid accumulation not otherwise certainly taken care of in a patient who requires a respirator;
5. Bilateral paralysis or spasm of the vocal cords;
6. Rapidly progressive bulbar symptoms;
7. Grave signs of vasomotor failure;
8. Untrained or inefficient attendants, inadequate equipment, or poor co-operation of the patient with doubt that the airway will be kept constantly free of secretions.

II. Crushing Injuries of the Chest

Non-penetrating injuries of the chest with multiple rib fractures may cause paradoxical movement of the affected segment of the thorax. Pain makes coughing ineffectual and so the tracheo-bronchial tree is poorly cleared, resulting in stagnation of secretions within the alveoli and bronchioles with further impairment of ventilation.

A large number of therapeutic measures have been employed through the years with no single procedure gaining widespread acceptance. These measures have ranged from simple adhesive strapping to complicated forms of operative skeletal fixation. At present tracheotomy is indicated in the more severe cases. This procedure, (a) reduces paradoxical movements, (b) alleviates pain by decreasing movement of fractured ribs, (c) provides a ready method for aspirating tracheo-bronchial secretions, and (d) permits maintenance of a clear airway during convalescence.

III. Complications in Cranial Injuries and Surgery

There are two factors whereby difficulties in the respiratory tree may impair the function of the brain.

1. Pressure Factor: There is a close relationship between intra-thoracic and intra-cranial vascular pressures. Increased fluctuations of intra-thoracic pressure produced by partial obstruction of the airway when transmitted may seriously aggravate intracranial bleeding. Tracheotomy depresses these fluctuations of pressure and so acts as a safety vent towards stabilizing intra-cranial pressure.

2. Cerebral Anoxia: produces, (a) primary neuronal death, (b) cerebral edema and increased intra-cranial pressure, (c) hypertension, (d) dilation of cerebral blood vessels (CO_2 is a vaso-dilator), (e) depression of cough reflexes, (f) initial stimulation of respiration with a later depression.

Tracheotomy helps by decreasing the dead space, decreasing tidal air and so reduces the dilution factor to allow higher partial pressures of oxygen to reach the respiratory epithelium.

IV. Thermal Injuries

Blast burns injure the superficial layers of the tracheo-bronchial lining and reduce ciliary activity. Tracheotomy aspirations are effective in removing crusts and dried secretions thus preventing respiratory obstruction.

V. Laryngo-Tracheo-Bronchitis

This entity combines acute obstruction of the upper respiratory tract (larynx) with gradual accumulation of secretions in the lower tract. Tracheotomy has two main indications here:

- (a) Restoration of airway and normal intra-thoracic pressure.
- (b) Prevention of sudden asphyxia or gradual exhaustion.

VI. In the Acutely Ill Surgical Patient

In this category are included such conditions as major surgical procedures about the face and neck, acute cerebral injuries and certain cases of chest trauma. A seriously ill patient frequently develops post-operative pulmonary complications, e.g. atelectasis, broncho-pneumonia, aspiration pneumonia and lung abscess. Colvin¹² recommends the following measures to prevent these complications:

- (a) Encouragement of the patient to cough and to breathe deeply;
- (b) Oral and pharyngeal suction;
- (c) Intra-tracheal suction;
- (d) Bronchoscopy;
- (e) Intra-tracheal intubation;
- (f) Tracheotomy.

VII. In the Treatment of Tetanus

Creech¹³ states that tracheotomy should be considered, at the time of admission, in all patients with any oral difficulty, either trismus or dysphagia. "Although at first this appears as a radical procedure, it is in fact a very conservative one because not only does it eliminate practically all respiratory embarrassment by maintaining an open airway, but it also greatly facilitates the removal of tracheal and bronchial secretions. Profound sedation which otherwise is so harmful by predisposing to respiratory complications, is not necessary if an open airway is maintained."

VIII. Botulism

The problems in the management of the botulism patient are similar to those of the bulbar poliomyelitis patient who has respiratory distress

because of pharyngeal pooling of mucous. Bofenkamp¹⁴ has reported a case in which tracheotomy was performed with a favorable outcome.

Other Conditions for which tracheotomy has been performed in selected patients with good results include:

IX. Eclampsia.

X. Uremia.

XI. Morphine and barbiturate poisoning.

XII. In some cases of cerebro-vascular disease or acute neurologic disorders in which there is prolonged respiratory embarrassment.

XIII. Severe forms of acute suppurative bronchitis superimposed on chronic pulmonary disease.

It should be emphasized that tracheotomy in all conditions listed above is performed only to prevent serious pulmonary complications and is never intended to cure the primary disorder.

There is, of course, the danger that tracheotomy itself can give rise to new complications, perhaps just as serious. These are almost invariably the result of unjustified delay, poor surgical technic during a hastily performed emergency procedure, or inadequate post-operative care. A correctly performed tracheotomy is a harmless procedure and should carry no additional risk! In rare instances certain complications¹⁵ may arise. These are haemorrhage, pneumothorax, mediastinal emphysema, lacerations of the esophagus, wound infection and subcutaneous emphysema.

"In any doubtful case, the risk of delay is far greater than the risk of performing a tracheotomy.

Surgical intervention cannot be expected to change the prognosis once the patient is "in extremis" or after asphyxia and cardiac exhaustion have passed beyond the stage at which recovery is possible."

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Paediatrics

Scurvy

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C

The scurvy flew through the schooner's crew
As they sailed on an Arctic sea,
They were far from land and their food was canned,
So they got no vitamin C.
For "Devil's the use of orange juice,"
The skipper 'ad said, said he.

They were victualled with pickled pork, my dears,
Those mariners bold and free,
Yet life's but brief on the best corned beef
If you don't get vitamin C.

During the last five months there have been eight cases of scurvy admitted to the wards of the Winnipeg General and Children's Hospitals. Other cases have been seen in private practice, and no doubt still more seen in other hospitals. All presented typically with a pseudo-paralysis or tenderness of the legs. The mother noting irritability, fever, screaming when the diaper was changed, or the child handled. In those with teeth, haemor-

rhages into the gums was noted. Some had roughening and desquamation of the skin, the "bayonet" type of depression at the costo-chondral junctions, pre-tibial oedema and anemia. The radiological pictures showed the ground glass appearance of the long bones with dense white lines at the ends and an area of translucency proximal to this "stencilling" of the epiphyses and corner signs. Trauma and poliomyelitis were considered in the differential diagnosis.

The age of these children ranged from seven to fourteen months. They were all the youngest of families of four or more children. None had been breast fed. They were all on evaporated milk mixtures and about the only added food was cereal. None had had orange juice. The reason expressed for not giving orange juice, or fruit and vegetables, was that the child refused to take them, or they caused vomiting or diarrhoea. In some, vitamins had been tried and abandoned because they upset the infant. In others vitamin preparations containing only A and D had been used. Some parents

found the cost of orange juice and vitamins too high. While in hospital four were private patients and four were on staff.

Historically scurvy has been recognized for centuries. When Vasco de Gama sailed around the Cape of Good Hope in 1498, one hundred of his men perished from scurvy out of a crew of one hundred and sixty. On this continent in 1535 scurvy broke out among Jacques Cartier's men. One of the sailors learned from the Red Indians of a decoction from the needles of spruce trees which cured the complaint. Lind 1757 described in his book a famous experiment in which the most sudden and visible good effects were perceived from the use of oranges and lemons. Captain Cook made his men eat fresh food to keep them free from scurvy. Regulations enforcing the consumption of daily rations of lemon juice were introduced into the British Navy in 1804. Similar regulations were adopted by the Board of Trade in 1865 for the mercantile marine. In infants scurvy was first definitely recognized as such by Sir Thomas Barlow in 1883.

It has been shown that scurvy takes some four to five months to manifest itself after all vitamin C has been withdrawn, and that the baby is born with a good store of vitamin C. Breast milk is an adequate source of vitamin C in itself, and if, in addition, a good mixed diet containing fruit and vegetables is introduced around three months of age the chances of developing scurvy are still further reduced. A recent article in one of the daily newspapers has stated that milk contains sufficient vitamin C, and expresses the hope that doctors will now give up recommending orange juice. The reference texts, however, show milk to contain about 6 mgm. per pint and even this may be destroyed by boiling. By giving vitamin preparations containing C, an orange, or 1-2 ounces of orange juice, or 2-3 ounces of tomato juice daily at a cost of 3-6 cents scurvy can be prevented. By expending \$10.00 over a period of six months many of the mothers could have saved over \$100.00 in hospital bills and a lot of needless anxiety and suffering.

With this long history of recognition of the disease, later its cure and prevention, and finally the synthesis of vitamin C in 1933 it is interesting to conjecture why so many cases should suddenly occur in what one of our recent Scottish immigrants has described as "this land of plenty."

As has been shown the cost is not exorbitant. The fault lies in part with the mother who, with a large family successfully reared, has obviously grown a little careless. The claim that the infant refuses orange juice or a balanced diet is more probably due to the fact that she has not spent

that little extra time to achieve the diet. Ignorance of its necessity has also lulled the mother into a false sense of security. For this in part the medical profession must take the blame. The importance of diet with adequate vitamins must be emphasized, and care should be taken that the mother knows what preparations include vitamin C. It is probably wise that this verbal information is supplemented by giving each mother written instructions on leaving hospital. This is particularly important with the public patients who, likely as not, will not seek routine examinations and advice at regular intervals. In addition the press can help by periodically publishing articles on such day to day subjects. This would serve a far more valuable service than descriptions of many of the more spectacular and rare diseases and their cures. In this modern age with its craving for the dramatic it is wholesome that the simple necessities of life are kept to the fore and receive their rightful emphasis.

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Average Daily Requirement of Vitamin C in first year of life—25-50 mgm. Foods containing some Vitamin C—

Cabbage—Cooked—26 mgm. per 100 gms. (3 ozs.).

Raw—52 mgm. per 100 gms.

Tomato—Cooked—12 mgm. per half cup.

Juice—23 mgm. per half cup.

Potato—Baked—13 mgm. per 1 of average size.

Banana—10 mgm. (average length of 10"):

Milk, Fresh—6 mgm. per pint.

Evaporated—5 mgm. per can.

Canned Baby Foods—2-9 mgm. per can.

Vitamins A, D and C drops supply 50 mgm. daily at cost of 4-6 cents.

Orange—Supplies 49 mgm. daily at a cost of 3-4 cents.

Orange Juice—1-2 oz. supplies 42 mgm. at a cost of 2-3 cents.

Tomato Juice—2-3 oz. supplies 25 mgm. at a cost of 2-3 cents.

Ascorbic Acid Tablets—Supply 50 mgm. at a cost of 1-2 cents daily.

Acknowledgment

I wish to thank the members of the medical staff of the Winnipeg General and Children's Hospital for their assistance.



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Milk Minerals (total)	7.00%	0.9%
Calcium	1.00%	0.13%
Phosphorus	0.81%	0.10%
Water	3.00%	87.9%
Calories per oz.	119	15.75

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Ward Rounds

Edited by Wallace Grant, M.D.

Recent Experiences With Four Unusual Ophthalmological Conditions

Case Presentations at Ward Rounds

April 29th, 1954

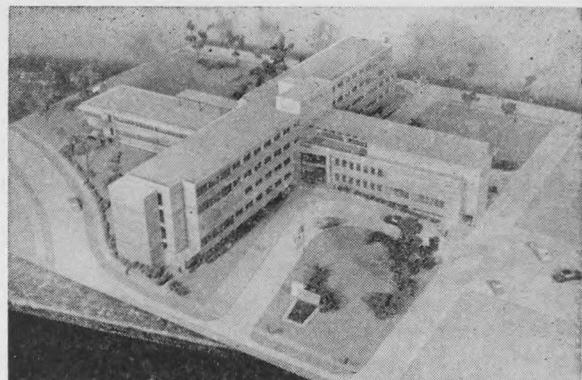
Chairman: Wallace Grant, M.D.

Transient Paralysis of Accommodation and Convergence

Case No. 1—Presented by Dr. G. Holman

This eleven-year-old girl (A 3046) who has, since birth, had a deformity of the legs, the etiology of which is not too clear, has had seven operations, including wedge osteotomy to correct it. She was admitted to this hospital on April 3rd, comatose, responding only to painful stimuli, having been sick only since the previous evening. She had, however, had a mild upper respiratory infection the previous week. On examination reflexes could not be elicited, her fundi appeared to be normal, there was slight resistance to flexion of the neck, and she was unconscious. On lumbar puncture, gross purulent fluid was obtained and meningococci were seen on smear of the fluid and grown when it was cultured. Treatment was with sulfonamide and penicillin in massive doses, and her temperature, which had been 105° F. on admission, became normal in thirty-six hours. However, from the clinical point of view, improvement was not so rapid and she remained semi-comatose for five or six days. When consciousness did return, it was noted that although she talked to you she did not look at you, and it was further noted that she could not distinguish test figures, unless they were held about ten feet away from her. This difficulty with near vision persisted for about a week, and appeared to be due to a paralysis of accommodation. Today her vision is practically normal, her power of accommodation seems to have almost completely returned, although it is not quite as prompt as one usually sees in a child of this age. She can now read a comic book at a distance of a foot or less from her eye.

Dr. R. Ross: There are just two points I would like to emphasize. First of all I am always surprised at the way children with purulent meningitis respond in this hospital—by the time I get a chance to look at them they are commonly better. With adults, and even young adults, we are accustomed to see them fairly unresponsive for as long as eight or nine days, in spite of early diagnosis and treatment. They also commonly have an amnesia for perhaps three weeks after they are otherwise clinically normal. This little girl acted more like an adult in that respect. The second



thing is the question of her difficulty with near vision. This failure in accommodation and convergence is similar to what one finds commonly after polioencephalitis. Usually the polio has been characterized as well by a marked diminution in consciousness while it was acute, and this symptom of paralysis of accommodation may persist for four or five months afterwards. These patients always say "I can see things at a distance fairly well, but when I try to read I can't make out letters, they are blurred or moving, or double." The only abnormality one discovers on examination is a lack of ability to converge and accommodate, and so far as I know there is no particular treatment, since if they are left alone they all seem to recover.

Dr. K. Martin: Is the visual defect just due to this lack of power of accommodation?

Dr. Ross: I think it is. I am sure Dr. Beckman or Dr. Reed could say more about it.

Dr. Martin: And that's only in poliomyelitis or some similar neurological infection?

Dr. Ross: Yes, as far as I know, but others may have seen this sign and symptom without it having been preceded by polio or polioencephalitis.

Dr. Holman: One might also add that when this child did begin to come out of her stupor she was very slow to talk, and then her speech was slurred, halting and indistinct. Her speech improved concomitantly with the improvement in her vision.

Dr. De Pape: Did her spinal fluid clear up, or was it checked after her admission?

Dr. Holman: It was checked three days after admission and was found to be sterile although there were still 2,000 cells per cubic millimeter (there were 20,000 cells per cu. mm. initially). It was examined again a week later and was found to be quite normal.

Dr. Beckman: I saw her first about ten days ago and at that time she had no accommodation and no convergence and there was nothing to suggest that this was due to anything but a central lesion. I wondered just where the responsible lesion would be located.

Dr. Ross: I think that this must be a mid-brain lesion, the reason for saying this is because of the associated absolutely flat stupor which seems to be a pre-requisite for this syndrome. I would say that the disturbance in consciousness and the inability to converge and accommodate would be due to the same lesion probably located high in the mid-brain in the mid-line.

Dr. Martin: Do the ophthalmologists agree that it is the lack of convergence and accommodation that gives the visual defect, or do they think there is something more involved?

Dr. Ross: I am sure that this syndrome follows other conditions, other severe debilitating diseases.

Dr. Reed: Yes, it's quite a common thing after diphtheria and I've seen it after influenza after which it clears up, and it commonly occurs after encephalitis lethargica when there is permanent paralysis of accommodation and convergence.

Dr. Ross: With loss of upward movement as well?

Dr. Reed: Not necessarily, just paralysis of accommodation and convergence. Most people suffering from Parkinsonism can't converge at all. Since it occurs permanently in these patients I should think it might well be nuclear.

Dr. Beckman: When it occurs following diphtheria it would probably be peripheral, wouldn't it?

Dr. Reed: Yes, in that instance it would probably be a toxic phenomenon and I think I'm right in saying it clears up.

Dr. Ross: Don't you think that the site of the lesion in Parkinsonism is probably the same as the site involved when it appears with any other disease? I think we have reasonable evidence that this is around the aqueduct, about the level of the red nucleus or a little bit higher.

Atypical Marfan's Syndrome

Case No. 2—Presented by Dr. D. Grewar

This is a boy (Case No. A 3018) age 13½ years, who is one of a family of six. The mother has had eight pregnancies, two of which ended in miscarriage, and the liveborn were four boys and two girls. The two girls died, one at nine months and one at ten months with what the mother described as "convulsions." This boy weighed about nine pounds at birth and made normal progress, there being nothing unusual about his developmental or nutritional history. He was first seen at the Children's Hospital at the age of four because he had pain in his left ear, this appeared to be due to the presence of a furuncle in the ear, but at the same time it was noted that he had some abnormality of his eyes. The mother reported then that the three brothers also had some visual disturbance. He was at that time referred to Dr. Beckman's Clinic and admission was advised for treatment of the furuncle and investiga-

tion relative to his peculiar visual anomaly. At the present time he is a child of average physical status, his height (50½ inches) and weight (59 pounds) are both about the 75 percentile. He has a normal stature with no kyphosis, and his span from fingertip to fingertip is 52¼ inches. He has no appreciable abnormalities in his hands or wrists, although it is interesting that his mother, who also has some visual anomaly, has rather long hands from wrist to tip of finger. The shape of his skull is quite normal. The most striking thing about him is the tremulous character of his iris in both eyes. He has a slight nystagmus at the extremes of lateral movement, and his vision is obviously impaired. This is a problem at school where he cannot properly see the blackboard even from the front seat. His muscle status is normal and the joints and ligaments are not remarkable. The palate is perhaps slightly high and arched. The heart is normal in size, there is a triple rhythm, but no other significant abnormality. When he was first seen by Dr. Beckman, a provisional diagnosis of Arachnodactyly or Marfan's Syndrome was made. The mother had a similar trembling iris of the left eye, the cornea of the right eye is cloudy and yellow (apparently she had a cataract operation to improve her vision in that eye without much success). With the pupils dilated one can see that the lens is partially subluxated. X-ray and E.K.G. examination of his heart have revealed no other abnormality. Today we X-rayed his hand to determine whether or not there are any extra epiphyses, although he does not in fact, present the complete picture of Marfan's Syndrome. The arachnodactyly, which is supposed to be a common feature, is missing here.

Dr. Beckman: You will see that the pupils are not well dilated and one reason is the fact that they react poorly to Homatropine or Atropine. These children generally have miosis (contraction of the pupil) because of the rigid structure of the iris and not because of any peculiarity of the muscles of the iris. As Dr. Grewar stated, this boy does not present all the features of arachnodactyly, but he does have subluxation of the lens, trembling iris, and his fingers are somewhat long, although others feel that this is not notable. As has been stated, he is one of four brothers, all of whom have similar ocular peculiarities and the mother too shows these features and long fingers as well. Generally this condition occurs in males and it is supposed to be a dystrophy of the mesoderm from which the zonular fibres allegedly develop. Because of this dystrophy the zonular fibres crack so that the lens dislocates. Characteristically, these children have very long arms and legs, and phalanges. The visual disturbance can be either extreme far-sightedness or extreme short-sighted-

ness, depending on whether they are looking through the lens or through that part of the pupil not covered by the lens. Sometimes, after refraction, glasses can be fitted which are of some help. If they are not helped by glasses then an effort must be made to remove the lens, a procedure which is made more difficult by the fact that there is no support to the lens material which has to be scooped out. Now (showing picture) this is a more typical example of the syndrome. The boy is tall, thin, and shows atrophy of the muscles and fat. Others show scoliosis or kyphosis and frequently, unusually lax joints due to atrophy of the ligaments. Besides the subluxation of the lens there may be coloboma of the iris, buphthalmos or perhaps megalocornea. It is likely that those children who are most markedly affected usually die in early infancy and so are not commonly followed.

Dr. Briggs: I think we should say quite definitely that this is not arachnodactyl which really means "spider fingers," which he does not have. The boy shown in the picture does have "spider fingers" but certainly this boy does not.

Buphthalmos

Case No. 3—Presented by Dr. G. Holman

This little seventeen-month child (Case No. A 1686) was born to an unmarried mother. At birth she was noted to have bilateral corneal opacities.

The child has been in this hospital on five different occasions, each time with an upper respiratory infection or bronchopneumonia. At the time of each admission the corneal opacities have been noted as has a systolic murmur. The heart murmur has become increasingly intense so that it is now more or less of a "machinery murmur" maximal at the second left interspace with a pronounced systolic component to the left of the sternum at the fourth interspace. The E.K.G. at three months of age suggested right ventricular hypertrophy and this is still apparent on recent tracings.

Dr. H. Reed saw the child recently and thought that congenital glaucoma could not be ruled out without checking the intra-ocular tension under anaesthetic, and he will discuss his handling of the problem.

The mother insists quite definitely that she had no illnesses during her pregnancy, but she admits that, because of the circumstances of the conception, she did attempt to abort herself. She used "slippery elm" and quinine tablets (two bottles in two days) at about the four and a half month stage. She herself made the observation that this may have been responsible for the child's eye trouble and perhaps she is correct. Dr. Ferguson and Dr. Medovy, who have both examined the heart, feel that she has a patent ductus arteriosus.

She has a collapsing pulse, and the blood pressure seems to be about 110/40.

Dr. S. Israels: Is there any hearing defect?

Dr. Holman: An attempt has been made to assess her hearing and it is defective but it is difficult to know the severity of the deafness since she doesn't speak and is practically blind.

Dr. H. Reed: I think that the interesting thing about this patient is the timing of the attempted abortion. I believe that so far there have been about 12 reports in the literature of buphthalmos in the infant of a mother who had rubella during pregnancy. Congenital cataracts and cardiac anomalies follow rubella in the first two months of pregnancy but buphthalmos appears to follow rubella during or after the third month of pregnancy. In this case the mother waited until she felt the "quickenings" before she took the abortifacients. She obtained slippery elm, quinine, and a bottle of medicine from which the label was removed so that its contents are unknown. She took these drugs over a period of 48 hours and as far as I can gather from her story she must have had at least 60 grains of quinine if not 120 grains. She was unsuccessful in producing the abortion, but I think she was probably successful in producing this buphthalmos.

According to Ida Mann, buphthalmos occurs if the interference to the embryo takes place during the fifth, sixth, or seventh month. At the end of the fourth month of embryonic life the filtration angle in the anterior chamber of the eye is still filled with mesodermal tissue. During the next three months this mesodermal tissue disappears, and the filtration angle opens up so that aqueous can drain into the Canal of Schlemm. It has been shown in experimental embryology that it is not the nature of the interference that matters, but the time at which it occurs. At different periods during embryonic growth certain groups of cells grow and differentiate rapidly. If interference occurs at this critical period of development these cells will be damaged. It is possible that the abortifacients were taken at this critical period for the development of the filtration angle of the eyes in this case. After the example of megalocornea is shown we shall talk of the differential diagnosis.

Dr. Grant: Do you have anything to say about the cardiac condition Dr. Ferguson?

Dr. Ferguson: The murmur appears to be a more or less typical "machinery murmur" such as one finds in patients with patent ductus arteriosus, although the right ventricular hypertrophy on E.K.G. makes one worry a little bit as to the diagnosis. I think that no particular surgical treatment is indicated here at present, but the child will be followed at six month intervals and when a diagnosis can be made more definitely,

surgical ligation of the ductus probably should be performed.

Dr. Grant: One other question. What is her mentality? Is she not severely mentally retarded?

Dr. Grewar: We could not decide whether or not this apparent slowness was due to her inability to see and her probable hearing defect. Her head circumference, however, is said to be 16½ inches.

Megalocornea

Case No. 4—Presented by Dr. R. Myers

This child (D.G. No. A3320) aged 13 weeks, was admitted to hospital on April 13, 1954. The reason for admission was that he had not been doing well since birth. He was born on January 9th in the Misericordia Hospital, apparently after a full term pregnancy, but with a birth weight of 4 lbs. 2½ oz. He remained in the hospital nursery until March 9th, when his weight was 5 lbs. 15 oz. He seemed to do reasonably well in the foster home although he did not gain well. On admission to hospital his weight was 7 lbs. 1 oz., and after some change in his feeding he has gained quite adequately. The other points of interest were the long narrow head and the prominent eyes. A consultation was requested with the Ophthalmological Department and Dr. Reed will discuss his findings.

Dr. H. Reed: The interest in this child's condition is primarily because of the differential diagnosis from buphthalmos. We happened to have this child in the hospital at the same time as the child with buphthalmos. The child's eyes appeared big so, under an anaesthetic, we measured the limbal diameter and it was found to be 12 mm. The limbal diameter, or corneal diameter at birth is fairly constantly about 10 mm. During the first year of life it increases to about 11 m.m., reaching a maximum in the adult of 11 to 11.5 mm. Anything over 12 mm. suggests either megalocornea or buphthalmos.

After discovering that the limbal diameter was 12 mm., we measured the intraocular tension and found it to be 25 mm. of mercury in each eye. This tension and the fundi were normal so I think we are quite justified in making a diagnosis of megalocornea.

To refer to the first child again, under an anaesthetic we measured the limbal diameter and in this case it was 13 mm. in each eye and the intra-ocular tension in one eye was 50 and in the other 35. In the eye with the pressure of 50 we did an iridencleisis (that is, an operation to try to permit drainage) and on the other eye we attempted goniotomy which was not successful. A week later an iridencleisis was done on the second eye.

These are the important points. If the diameter of the cornea is enlarged it suggests either megalocornea or buphthalmos. The intraocular tension

should then be measured under an anaesthetic, if it is raised it is buphthalmos, if it is normal it is megalocornea. The cornea is clear in megalocornea but in congenital glaucoma it always becomes hazy unless the tension can be controlled.

Dr. Grant: Buphthalmos is just another name for congenital glaucoma, is it not?

Dr. Reed: Buphthalmos means "Ox eye" and is another name for infantile glaucoma or congenital glaucoma. The eye grows about 1 cm. in length during the first few years of life, and during that period, if raised intraocular tension develops, the eye becomes large, and resembles an ox eye. If the rise in tension occurs after the period of growth of the eye, the only thing that happens, apart from blindness, is the change at the lamina cribrosa which is pushed out to form the glaucomatous cup.

Dr. Childe: What is the prognosis in this case, Dr. Reed?

Dr. Reed: The prognosis in buphthalmos is always very bad. Almost certainly this child will become totally blind.

Dr. Childe: And in the second case?

Dr. Reed: The prognosis in megalocornea is very good. They usually have myopic astigmatism, and a fairly high proportion of them develop cataracts at 40. Cataract removal in these cases is a little difficult and complications are liable to occur but the overall prognosis in megalocornea is good. The other interesting thing about megalocornea is that it occurs almost entirely in males. It is a sex-linked characteristic and is handed down much as is color blindness. It occurs in males and is passed on through unaffected mothers.

Dr. S. Israels: Does the size of the angle affect your decision about treatment?

Dr. Reed: Barkan² introduced the treatment known as goniotomy, which means "cutting the angle." A knife is pushed across the anterior chamber from the opposite side in an attempt to open the angle. If the operation is performed before damage has occurred the results are often quite satisfactory. If treatment is late, as in this case, the only type of operation is to reflect a flap of conjunctiva and make a hole at the limbus into the anterior chamber for sub-conjunctival drainage. Some children have a very wide angle and some a narrow one, but the thing that affects treatment is whether they are seen late or early. In adults this is more controversial, some people would say that the width of the angle affects the decision about type of treatment, but I think that the answer is that the majority of surgeons get used to one type of operation and this is the one they use.

Dr. K. Martin: What are the corneal changes in buphthalmos?

Dr. Reed: In buphthalmos the intraocular tension rises and the cornea becomes hazy. Tears in Descemet's membrane commonly occur so that aqueous seeps into the cornea and increases the cloudiness. This is especially pronounced centrally. If the nutrition of the cornea becomes affected at any time it becomes opaque.

Dr. Beckman: Did you point out, Dr. Reed, that in megalocornea the anterior part of the eye is affected whereas in buphthalmos the whole eye is involved?

Dr. Reed: That is an important point. In megalocornea the anterior half of the eye is involved

so that the cornea, anterior chamber and lens are enlarged. Derrick Vail³ in the United States has suggested that a better name for it would be "Anterior Megalophthalmia." In buphthalmos the whole of the globe is involved. The iris and zonule are stretched, and the lens may dislocate later in life.

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Book Review

A Simple Guide to Electrocardiography

Books on electrocardiography seem to possess one or more of several disadvantages for the beginner: the introductory chapters on electrophysiology are so intricate and longwinded that the reader's interest is early drowned in a troubled sea of vectors, axes and gradients; or only certain aspects of the subject are dealt with, for example, the arrhythmias may be entirely omitted; or illustrations are deficient and frequently situated uncomfortably far from the descriptive text.

For several years I have been attempting to introduce fourth-year students to the comparatively easy technique of interpreting electrocardiograms. During this period I have been unable to recommend any single text that deals with the subject quickly and simply and yet is sufficiently comprehensive. This book is an attempt to supply such a manual. Its aims are: (1) to emphasize the simplicities rather than the complexities of the electrocardiogram; (2) to give the reader only those electrophysiologic concepts that make everyday interpretation more intelligible without burdening him with unnecessary detail; (3) to cover all diagnostically important electrocardiographic patterns; and (4) to provide adequate illustrations and in every instance to have the illustration conveniently situated to the reader as he reads the descriptive text. To achieve this last desideratum, the publishers have generously waived publishing conventions and given me a free hand in the arrangement and spacing of illustrations and text.

"This book is designed for those approaching electrocardiography from the point of view of the clinician. It is hoped that it will enable the beginner to acquire a rapid but thorough grasp of a sophisticated yet simple discipline."

The above is the preface of one of the most useful books on the subject. The author does exactly what he sets out to do as stated in his preface. The emphasis is upon the simple and upon the common. There are 115 figures and a 3-page index to illustrative cardiograms. The general index covers ten pages (of two columns each) and the text occupies 159 pages.

The text is simply worded and there are very brief tabulations of the salient features of the condition discussed. The chapters are headed—Rhythm and Rate; The Normal Complexes; Axis Deviation; Genesis of Precordial Pattern; Ventricular Hypertrophy and Strain; Bundle Branch Block; The Arrhythmias, Heart Block; Myocardial Infarction, Coronary Insufficiency; Miscellaneous Conditions (valvular lesions, pericarditis, etc.) The Augmented Leads.

The book is so clear, so well illustrated and so complete that it is likely to be exceedingly popular.

Clinical Electrocardiography, by Henry J. L. Marriott, M.D., Associate Professor of Medicine, University of Maryland, Assistant Cardiologist, Mercy Hospital, Baltimore. Williams & Williams. In Canada: Burns & MacEachern, 12 Grenville St., Toronto 2.

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Fugitive Pieces

J. C. Hossack, M.D., C.M. (Man.)

Apples of Gold

I have just been reviewing a medical dictionary. Dictionaries of any sort are most intriguing. You can learn more from one in ten minutes than in an hour from almost any other book. It is notorious how, on the way to find the word we want, our attention is distracted a dozen times, and from these chance encounters we return with richer profit than was our original aim.

But a dictionary to be of value must tell us about the ancestry of its words. The first words were pictures and it is still in pictures that we think, most especially when the origin of the word is in our mind. Much of our professional terminology and a great many of the words we employ daily are of Greek or Latin origin, and a knowledge of these tongues will give us the meaning of quite unfamiliar words. In my review I mentioned the word "sympus" which resolves itself into sym—together, and pus—a foot. A sympus is a monster in which the lower extremities are fused. A synonym is sirenemelus: siren—a mermaid, melos—extremities, thus it is a creature whose body in its lower part is like that of a mermaid.

Some words have lost in part their first meanings. A "symposium" today is a sober discussion in which a number of speakers participate. Originally it was a drinking party (sym-together, posis-drinking) with its attendant conversation.

Often daily usage has weakened a word. As we use them today neither "attract" nor "attention" are strong words. The picture conjured up by "she attracts his attention" is little more than that of a man looking at a woman. Give it back its original strength and we see two people with arms reaching forward, the girl drawing (ad-to, tracho—I draw), while the youth stretches towards her (ad-to, tendo—I stretch).

Picture-language is common in our professional literature but the pictures have become changed. We say "clavicle" and see in our mind's eye the collar bone. But behind it is "claviculus"—a little key—the clavicle is the little key that locks together neck and breast. To the Greeks it was kleidos—that which closes—and we still use the Greek form in "stermo-cleido-mastoid." Mastoid, again, means breast-like (masta-a breast, eidos-like). "Parasite" originally meant "a guest" (para-beside, sito-food) the one who shared your hospitality..

Sometimes a whole story lies behind a single word as, for example, in atropine. To most of us that name arouses in our memories certain physiological actions. We are conscious of it only as a powerful and dangerous therapeutic agent. Literally the word means a-no, and trope-turning;

or, rather, that is the significance of Atropos who gives the alkaloid its name. For Atropos was one of the Fates, the relentless one who with her shears cut the thread of life. Women early discovered a use for the plant that holds the drug. They found that it would dilate their pupils and give lustrous beauty to their eyes whence came the name belladonna—beautiful lady. Atropa Belladonna is a beautiful lady who carries death in her hand and will not be turned from her purpose.

There is a vivid story, too, in every syringe. It takes us back to Ancient Greece, and to a beautiful and chaste maiden who is fleeing from lustful Pan. She looks about her wildly, seeking a place where she can hide but sees none save only the river hitherto she speeds invoking as she runs the aid of the water nymphs. But Pan, far more fleet of foot than she, gains upon her and catches her just as she reaches the river's brink. Yet at that instant her prayer is answered and Pan finds in his embrace only a clump of reeds, for into reeds had she been transformed. The name of the maiden was Syrinx and she gave her name to reeds and tubes and—to the syringe.

A knowledge of the classical languages makes our own so much more easily understood that their omission from college curricula is to be deplored. The students in French-speaking universities are far more fortunate for they get a thorough grounding in the humanities. It is not a matter of the humanities versus science—both are important and between them there should be a balance. Too little science is bad, but is no worse than almost complete ignorance of studies of a cultural nature. After all we claim to be a learned profession.

There was a time when a school-boy had few subjects to study and was expected to know them well. Now his curriculum is crowded with subjects many of which are trivial and most of which never take root in his memory. The word "curriculum" is derived from the word "to run." It is well chosen. The average school-boy races so swiftly to his destination that he can tell little about the features of the road along which he has sped.

This reflects itself in after-life. The subjects studied are, say the educationists, the "important" ones, the "practical" ones. Yet, is anything of greater practical importance to professional men than the art of expression, and is there any art which is so little taught, or so little learned, in school? The taciturn have advantages, but not when they must inform, instruct, defend or refute.

Doctors especially have need to master the art

of expression. They are so many times called upon to present cases before others, and to discourse upon matters both lay and professional. To do so with success they must first have a knowledge of their subject and this they usually have. Then they must have the ability to make their subjects clear to their audiences. "Let all your precepts be succinct and clear, That ready wits may comprehend them soon, And faithful memories may hold them long." Neither the ear nor the eye should be plagued by vagueness or complexity. Both listening and reading should be comfortable and easy. To quote Horace again: "He who combines instruction with delight, Profit with pleasure, carries all the votes."

Important as is the matter, no less so is the manner. Better the snack that can be enjoyed than the meal, rich in calories, but ill-cooked and ill-served and therefore unappetizing and indigestible. Good food can be ruined in the kitchen, and in like fashion good material can be marred in its presentation.

"Words must be chosen, and be placed, with skill" particularly when they are to be read; for the eye is much more critical than the ear. To "hope the world will wink at all our faults, Is such a rash, ill-grounded confidence, As men may pardon, but will never praise." But "the word fitly chosen, is like apples of gold in a basket of silver."

The smoothness and seeming-artless simplicity of the good speaker or writer is far from artless. Partly it is the result of the clarity with which things stand forth in his own mind. Partly it is due to his familiarity with the medium he employs. Largely it is the result of his reading habits. It is difficult to speak or write better than one hears or reads. "Evil communications corrupt good manners" in this as in other things; and with speech as careless as it usually is, it is from books that we must get our guidance. Who would express himself well must read well—and much.

"True ease in writing" wrote Pope "comes by art not chance, As those move easiest who have learned to dance." But the art is not difficult of acquisition and anyone can acquire it. Masters by the score stand ready to instruct us. Familiarity with the classical languages is greatly desirable but is not absolutely necessary—lexicographers and translators have spared us the trouble of learning them. Everything worth while that has ever been written by anyone of any race in any language, we can find translated.

Osler was no pedant but did he not time and again urge his students to "get a relish for the good company of the race in daily intercourse with some of the great minds of all ages?" He himself owed much, and acknowledged the debt, to the Bible, Shakespeare, Browne, Montaigne, Plato and so on. These were no less his instruc-

tors than the living teachers he saw face to face.

More modern than these are some others who make good friends—Lord Macaulay, Edgar Allan Poe, Carlyle, Dryden, Motley, Milton, Prescott, Johnson, Scott, Trollope, Ruskin and more, and more, and more. What an enormous Faculty stands by, ready and eager to advise, to instruct, to illuminate, to encourage, to admonish, to amuse, to delight, to teach ever so pleasantly and quite at our own leisure! There are poets among them and philosophers, historians and biographers, travellers and story-tellers, of every age and clime, holding their mirrors up to nature, weaving their spells of enchantment, and all waiting by our elbow ready for our attention.

And not the least profit with which the pleasure is combined comes from the atmosphere by which they are surrounded, and which seeps into us, and is absorbed, so that our eyes are opened and we see instinctively what is right or wrong in syntax and in the choice of words, and, as instinctively, avoid the wrong and pursue the right. Those masters who have had so many pupils over so many centuries have not lost their magic or their power to teach.

We hear much these days about pernicious influence of "pulp-paper" magazines and "crime comics" (what a curious association—crime and comedy!) We are told that they contribute to juvenile delinquency which may be true. But I question (as Quiller-Couch has done before me) if any good boy has been transformed into a bad boy by anything that he has read. "Good" boys read "bad" books, but not often or much. Johnson advised "I would let a boy at first read any English book that happens to engage his attention; because you have done a great deal when you have brought him to have entertainment from a book. He'll get better books afterwards."

The healthy boy instinctively turns to healthy books. Who may be the modern counterparts of G. A. Henty, R. M. Ballantyne, Captain Marryat, and Fennimore Cooper, I do not know; but even in this day of space ships and atomic warfare these authors are as readable as ever, nor can their modern successors be more popular or better though they may be as good. That boy is fortunate who, early in life, is led, or finds his way, into the many goodly kingdoms that books can show him. For the earlier the taste is acquired the stronger it becomes, the greater is the pleasure derived and the longer it continues.

A lad, bent upon it, will find evil in the best of books. But if he prefers the trivial and the lewd, his preference is the result, rather than the cause, of his depravity if so it may be called. There have always been "penny dreadfuls" which often are not so much dreadful or evil as merely worthless. We have Pliny's words for it that no book is completely bad; but sometimes the grains

of wheat are so few and are so hidden in so many bushels of chaff that the search for them is profitless. And often teachers destroy healthy interest, ready to grow, by submitting plays, stories and poems to grammatical butchery. Thus children develop a distaste for anything called classical and go to the opposite extreme. To be sure the world abounds in evil, and if literature were completely to be purged of what is in of crime, treachery, and vice, if in other words it were rid of the seven deadly sins, not much would remain.

But there is a difference between gloating over the crime, dwelling on its horror, and seeing it merely as an element of the plot. To see minds in action, to comprehend the emotion that makes the deed inevitable, to hear men speak in passionate prose or glowing verse, to feel one's self upon the stage mingling with the actors, is to change the concept. Then the bloody corpse, the blinded man, the distraught daughter, the frenzied wife, all these become no more than properties which are necessary to the play. The plot is often trivial. The crime is often sordid. It is the choice and arrangement of words that makes the story good or bad, worthy or worthless. "Comics" are bad, not because they may deprave morals but, because they do debase the language; in which regard the newspapers are not much better.

The Song of Deborah redeems the incident of Jael and Sisera from what it otherwise would be—a ghastly and treacherous murder. The ugliness of incest, unwitting in Oedipus, latent in Electra, is overlooked as we read their tragedies by Sophocles. Dead Duncan's slaughter is almost forgotten as we watch the tortured murderers move towards their doom. The evil tale is thus as profitable as the good one when it speaks all the truth and is well told in fitting language that continues to vibrate in the ear and clings to the memory.

Books, save the most trivial, do not distract attention from life. They illustrate life. They expose the hearts and minds and souls, and display the bodies, of people as real as those we see each day. It is natural that doctors should still be doctors when they read, natural that they should view authors and characters as patients. They can understand a character such as Lear, so often have they met him. In Viola they see anorexia nervosa. The Hamlet complex, the Macbeth complex, the Richard complexes—has not every doctor encountered them a hundred times in commoners if not in kings? This professional knowledge of how and why they ailed gives life to what otherwise would be mere puppets and, by so bringing them closer to our business we also bring them closer to our bosoms.

Then there is the added familiarity with the authors that this knowledge supplies. Keats becomes not merely a poet who died at 23. He is a

young doctor coughing up his lungs. We would not let him die today at so young an age, so unemptied of his song. As we read the still entralling pages of Prescott we hold in mind that his eyes would serve him for but a single hour a day. The anxieties of Charles Lamb, the crippling deformity that twisted the body of Pope, the anguish that so often filled the breast of Hood—but did not quench his humour, all these arouse professional interest and increase our understanding of what they wrote. And often the inspiration comes less from their words than from the men themselves, such was their courage and determination.

Perhaps none are in a better position to appreciate authors and their works than are doctors because our understanding reaches so far below the surface. Neurotic old Sam Johnson becomes almost tangibly alive as he speaks of his asthma and stroke. Plutarch, we say, would have been a good doctor, so carefully does he narrate the first recorded case of psychosomatic medicine and the miserable death of Sulla the Dictator who, like Herod, was eaten up of worms. And then there are the quacks, such as Haji Baba of Ispahan and Gil Blas, whose adventures make us rock with laughter.

All these combine instruction with delight; nor, as we read, need we feel guilty of wasting time that could more profitably have been applied to the study of this month's journals. Journals are ephemeral things but the classics are immortal. The recent advances will soon be superseded but the basic facts remain. The newer remedies soon become the older remedies, but the distresses that plague us now, and threaten our children, plagued equally our ancestors. The mirror of the past reflects the problems of the present and of the future, and in it we see ourselves more clearly. Thus do we learn not only about things that touch us close or slightly, but as we read we learn also how to put our thoughts in words that are clear and meaningful.

Those who spend the last half hour of the day reading (in bed) the latest journal, might do better by following the example of Osler and spend it with the "great minds of all ages." And if anyone should feel embarrassed by the thought of entering this august company unsponsored, Osler will do that service most gladly and he will show you how in *Aequanimitas*.

For those who have known him only as the gruesome, hacked and dismembered victim of a grammar-thirsty teacher, it comes as a surprise to find how human, how amusing, how thrilling, Shakespeare can be. And how loud and sweetly do the poets sing when no grammatical analysts are around! Authors of every sort leave their spirits in their books and when you wish them to, these spirits will take you by the hand and lead

you to the realms of gold where you will many goodly kingdoms see. And they will so appreciate your notice that they will press upon you their gifts of phrase and story and will so enrich you that they will become your most cherished company.

"The reading of books, what is it but conversing with the wisest men of all ages and all countries, who thereby communicate to us their most deliberate thoughts, couched in good expression and digested in exact manner." Apples of gold in baskets of silver.

* * *

We began with a dictionary. Let us end with

one. Ruskin would have you use several. Incidentally his "Sesame and Lilies" will tell you how to read. But a good English (The Shorter Oxford) dictionary is indispensable. It is so easy to get the wrong idea of what a word means and to continue to use it incorrectly. And Fowler's "Modern English Usage" also will prove itself of daily value. And if one should find his time so occupied that he can spare only the fewest of minutes for out-side reading, these dictionaries will in a minimum of time furnish him not only with a maximum of instruction and profit but also with much pleasure and delight. A dictionary is a good book to read.

Medical History

The Dublin School of Medicine

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In the development of medicine within the past hundred years one can observe three distinct phases. In the early decades of last century attention began to be focussed on morbid anatomy and an attempt made to relate changes found at the autopsy table with those at the bedside. These were days when keen powers of clinical observation were developed and gave us such men as Bright, Addison, Astley Cooper, Charles Bell and Parkinson in English medicine.

Towards the end of the last century, following the stimulus of Virchow's teaching on inflammation and Pasteur's contributions in micro-biology, the trend was towards a development of the new science of bacteriology and the establishment of the relationship of pathogenic micro-organisms to disease.

With the turn of the century following the pioneer work of Schafer, Bayliss and Starling in endocrinology, Sherrington in neurology, MacKenzie and Lewis in cardiology, Rubner in metabolism and Folin in blood chemistry the emphasis has been placed on physiology and biochemistry and an attempt to interpret disease in terms of disordered function—a dynamic rather than a static viewpoint.

I propose tonight to deal with some of the contributions of the Dublin School of Medicine which were made during the first of these eras mentioned. The men of whom I shall speak were sound physicians, keen clinical observers and good teachers. They made fundamental contributions to medical knowledge in the early part of last century.

There are many illustrious names associated

with the Dublin School, but I shall only have time to deal with a few:

The Dublin School of Medicine

John Cheyne	1777 - 1836
Whitley Stokes	1763 - 1845
Abraham Colles	1773 - 1843
Robert Adams	1791 - 1875
William Wallace	1791 - 1837
Robert James Graves	1796 - 1853
Dominic John Corrigan	1802 - 1880
Francis Rynd	1801 - 1861
William Stokes	1804 - 1878

It may help us to orient ourselves if we pause a moment to recall the names of contemporary great men of medicine in other countries.

Contemporary 19th Century Physicians Paris School

Laennec, 1781 - 1826, Chest Diseases.
Bretonneau, 1771 - 1862, Infectious Diseases.
Broussais, 1772 - 1838, Therapeutics.

London School

Astley Cooper, 1768 - 1841, General Surgery.
Bright, 1798 - 1858, Renal Disease.
Addison, 1793 - 1860, Anaemia and Supra-renal disease.
Hodgkin, 1798 - 1866, Lymphadenoma.
Parkinson, 1755 - 1824, Neurology.
Bell, 1774 - 1842, Neurology.

Vienna School

Skoda, 1805 - 1881, Chest Disease.
Rokitansky, 1804 - 1878, Pathology.
Hebra, 1816 - 1880, Dermatology.
Semmelweiss, 1818 - 1865, Puerperal Fever.

It may throw a little more light on the activities of the men of whom I shall speak if we review very briefly the political and social background. I shall do this as briefly and impartially as it is possible for an Irishman to do.

Highlights in Irish History

1800—Legislative Union with England.
1808—Sir Patrick Dun's Hospital built.

1825—Trinity College School of Anatomy built.
 1829—Catholic Emancipation Act.
 1832—Cholera Epidemic.
 1838—Government Poor Law Act.
 1845-47—The Famine and Plague.
 1881—The Land Purchase Act.
 1882—The Phoenix Park Murders.
 1885—Gladstone's First Home Rule Bill.

In 1800 Legislative union was established between England and Ireland. This union, as is known to most of us, was not a very happy one. In 1829 a bill was passed making it possible for Catholics to sit in the Parliament at Westminster. 1838 saw the passage of the Poor Law Act which was the first step in social legislation since the union and made some provision for caring for the tremendous amount of poverty which was present at that time. It has been stated that at that time two million people were on the edge of starvation in Ireland. In 1845-1847 the potato crops of Europe were visited with a blight which gave repeated crop failures. Since the potato was the staple article of diet in Ireland this brought untold hardship. Famine followed by the ravages of cholera and typhus caused the death of two million people within a few years. Emigration to America in vast numbers followed this and gave New York and Boston their police force and politicians.

In 1861 Gladstone introduced his Land Purchase Act which mitigated to some extent the inequities of the Landlord System.

Whitley Stokes could lay claim to greatness in having sired such an illustrious son as William Stokes. However, he himself played a significant role in the practice and teaching of medicine in the early 19th century.

He was the son of Gabriel Stokes, Professor of Mathematics at Trinity College, Dublin. Whitley showed powers of leadership in the field of medicine. He was a scholar and senior Fellow of Trinity College and later became Regius Professor of Medicine in Trinity. He was a man of fine aesthetic tastes and held a prominent place in literary, scientific, and, alas for himself, political circles. He became a member of the Society of United Irishmen, which later under the leadership of Wolfe Tone became active in radical reform measures. As so frequently happens politics and professorial duties were not compatible and Stokes was suspended from Fellowship in Trinity College for a year.

However, Whitley Stokes could hardly be considered a radical in either politics or medicine. He was re-instated the following year and held the Regius Professorship until his death in 1845. He was succeeded in that position by his son, William Stokes, of whom more anon.

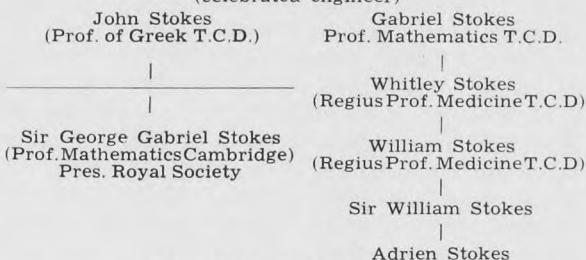
Whitley Stokes made no outstanding contribution to medicine. He was the author, however, of

several important papers. One of these was entitled "The Changing Nature of Disease." In this he describes the varying manifestations of fever in different generations.

The Stokes family provided an interesting example of ability in successive generations. Every generation of this family has provided outstanding leaders in the fields of education and medicine for two hundred and fifty years.

The Stokes' Family

Gabriel Stokes (1680)
(celebrated engineer)



John Cheyne (1777 - 1836)

The name of Cheyne has been handed down to us through "Cheyne-Stokes Respiration." Cheyne was born and educated in Scotland, practised in Dublin, and was particularly interested in diseases of the respiratory tract. He wrote an important treatise in 1809 entitled "The Pathology of the Membrane of the Larynx and Bronchia." In 1818, in the Dublin Hospital Reports he recorded "A case of apoplexy in which the fleshy part of the heart was converted into fat."

His description of the respiration is worth quoting. "For several days his breathing was irregular; it would entirely cease for a quarter of a minute, then it would become perceptible, though very low, then by degrees it became heaving and quick and then would gradually cease again: this revolution in the state of his breathing occupied about a minute, during which there were about thirty acts of respiration."

William Stokes reprinted Cheyne's description in a subsequent publication by himself and described this type of breathing more fully as he had seen it in several of his own patients. Since then it has become known as "Cheyne-Stokes Respiration."

Cheyne acquired a lucrative practice in Dublin and states that his income was £5,000 per annum for a period of ten years. He gave more attention to his private practice than to investigation or teaching and retired to live in England.

Abraham Colles (1775 - 1843)

Colles was professor of surgery in Dublin for thirty-two years, 1804-1836. He was the leading Irish surgeon of his day and wrote a treatise on surgical anatomy and another on surgery. His most important contribution is of course his original description of the fracture at the distal end of the radius that goes by his name. This

description was published in the Edinburgh Medical and Surgical Journal in 1814.

Colles had other interests, however, and in 1837 wrote a valuable paper on "Practical Observations on the Venereal Disease." In this he states the well known Colles' Law regarding immunity to syphilis in the mother of a congenitally syphilitic child.

Colles was a daring and brilliant surgeon and is said to have been the first man in Europe to tie the innominate artery successfully. He elevated the status of surgery; was a pupil of Astley Cooper's; was offered a baronetcy and refused.

Robert Adams (1791 - 1875)

In the medical school of Trinity College, Dublin, lectures in surgery were not recognized as a part of the curriculum until 1849. At that time the medical course was extended to four years. A professorship in surgery was established which in 1868 was raised to the dignity of Regius. At that time Robert Adams was called to the chair and occupied it until his death in 1875. Adams was a pupil of Colles.

Adams was striking in appearance and wrote several important papers. His interests in his earlier years seem to have been along medical rather than surgical lines. In 1857 he wrote a treatise on Rheumatic Gout.

He is much better known to us, however, as the author of a paper which appeared in the Dublin Hospital Reports in 1827. This paper was entitled "Cases of Disease of the Heart Accompanied by Pathological Observations." It is a long rambling paper in which casual mention is made of three patients who had a pulse rate of 30 associated with attacks of faintness. In one of the patients, who by the way was a physician, Adams found at autopsy extreme atheroma of the coronary arteries. He suggested that the symptoms were due to imperfect blood supply to the heart.

Twenty years later William Stokes published a paper in the Dublin Quarterly Journal of Medical Science entitled "Observations on Some Cases of Permanently Slow Pulse." He reported in this paper several cases of slow pulse accompanied by fainting attacks. Stokes called attention to Adams' earlier publication and concluded that this syndrome was due to fatty heart disease. The syndrome has come down to us under the name of Stokes-Adams disease which we now recognize as a manifestation of heart block.

William Wallace (1791 - 1853)

An Irishman with a Scotch name who introduced an effective method of treating the then called "French Disease." Wallace in 1836 introduced the use of potassium iodide in the treatment of syphilis.

Robert James Graves

The name of Graves stands out as the leading light in Irish medicine. He was a descendant of

a colonel in Cromwell's army and the son of a distinguished Professor of Divinity in the University of Dublin. He studied arts and medicine in Dublin and graduated with the degree of M.B. from Trinity College in 1818. Following this he spent three years abroad studying at Berlin, Gottingen, Vienna and Copenhagen. Graves, in his travels, is said to have become an accomplished linguist. This proved embarrassing on one occasion in Vienna when he was asked for his passport. On not being able to produce it he was arrested and held in prison for ten days as a spy. The authorities stated that no Englishman but a spy could speak German as well as he.

He did not lack physical courage and most of us are familiar with the incident which occurred on one of his travels in the Mediterranean on a trip from Genoa to Sicily. A violent sea sprang up and the non-trustworthy crew fearing the wreck of a non-seaworthy ship decided to put off in the only remaining life boat and leave the passengers to their fate. Graves, who was among the passengers, seized an axe, stove a hole in the life boat and threatened the same treatment to the skulls of any of the crew who did not get back to duty. He took command of the ship and brought her safely into port.

Graves, on his return to Dublin, became chief physician at the Meath Hospital and one of the founders of the Park Street School of Medicine. He began by introducing wide reforms in medical teaching and introduced the continental method of allowing students to examine patients. Medical teaching was largely didactic up to them. This practice was in vogue in the German Medical Schools, and through Graves' introduction of this teaching method it soon found its way into the English Schools of Medicine. Graves was a prolific writer, and his text-book on Clinical Medicine, written in a delightfully easy style, can be read with both pleasure and profit today.

It is refreshing to note that the same problems were under discussion in Graves' day with regard to medical education that we have with us today. Such problems as the value of the preliminary sciences such as botany and chemistry, the question as to when clinical teaching should be introduced in the curriculum and the value of the teaching of applied physiology are all discussed.

Graves' lectures were translated into French and Trousseau commended them to his students. Graves' name is enshrined in the original description of Graves' disease.

He is also remembered by his contributions to the treatment of fever. Epidemic disease, typhoid, typhus, and cholera, was rampant in Ireland in the early part of last century. The practice at that time was to starve the patients, purge them and bleed them. Graves took exception to such methods of treatment and advocated what we

would now call high calorie diets. He is said to have remarked on one of his hospital rounds that a suitable epitaph for him would be "He fed fevers."

It is a little difficult to visualize the state of medicine before Graves' time, but we must remember that all fever was thought to be due to a so-called "plus force" acting in the body. An effort at depleting this force was carried out by bleeding, purging, sweating and starving the patients. "Graves' teaching at this time came like a fresh breeze in a foul room." It swept away false beliefs and helped to establish sound dietetic treatment.

Graves' influence in the training of William Stokes is not to be overlooked. Stokes early became associated with him at the Meath Hospital. Graves in one of his writings, speaking of the value of small bedside groups in clinical teaching, mentions that he had given much attention to such a group, one of whose members was William Stokes.

He wrote with a clarity of meaning, a finely developed and restrained style and yet with a dogmatic firmness. He was not always correct in his conclusions, as for example in regard to typhus and typhoid fever, which he regarded as different phases of the same disease. These diseases were differentiated by Gerhard of Philadelphia in 1846.

Graves thought of fever as a general condition without evidence of localization in a single organ. He was a little pessimistic in one of his writings when he stated that there was doubt if the specific causes of fever would ever be discovered. This was only about 30 years before Pasteur's discovery of micro-organisms.

Graves gave the first description of the pinpoint pupil and introduced the timing of the pulse by the watch.

In reading his clinical lectures, one is impressed by his kindly feeling towards his patients' suffering. He used many drugs now forgotten. One should mention, however, his emphasis on the use of opium for the relief of pain. He and Stokes did much to popularize the use of the latter drug in the treatment of peritonitis.

There is a tendency in our medical teaching today to emphasize the importance of a diagnostic study of disease. Having reached an accurate diagnosis we are a bit apt, I fear, to lose interest in the matter of treatment unless we can employ some specific measures. Therapeutic nihilism in such cases may be the bastard offspring of ultra-scientific investigation of disease deprived of the humanizing thought that as physicians it is our job to treat sick patients rather than morbid anatomical states. Graves was anything but a therapeutic nihilist. His use of drugs was largely

empirical, yet we may well believe the remedies often gave symptomatic relief.

Sir Dominic John Corrigan (1802 - 1880)

Corrigan was associated with Graves at the Meath Hospital and is often referred to in Graves' Clinical Lectures. He is said to have studied for the Catholic priesthood, but later became interested in medicine. He was of true Irish stock, of fine physique and of delightful social qualities. Corrigan wrote a good account of the "famine fever" of 1847 which we now know to have been typhus.

He is best remembered, however, by his classic account of aortic insufficiency which appeared in the Edinburgh Medical Journal in 1832, at the age of thirty. This condition had previously been described by Hodgkin in 1828. Corrigan, however, gave a more detailed description of the clinical phenomena associated with this valvular defect. He was the first to call attention to the characteristic "water-hammer" pulse of aortic insufficiency, a type of pulse which goes by his name. Corrigan also called attention to expansile pulsation as a means of diagnosing aortic aneurysm—the so-called "Corrigan's sign." He gave us a good description of fibroid phthisis. He described angina pectoris as occurring in patients with aortitis, preceding Sir Clifford Albutt by 70 years, in 1837.

Corrigan was one of the few men of the Dublin School to attain the honor of Knighthood. He was appointed Physician to the Queen in Ireland in 1850 and received a Knighthood in 1860. He is said to have had a very remunerative practice from which he received an annual income of nine thousand pounds—surely an income of almost surgical proportions.

Some of us complain occasionally that we could learn and teach medicine more effectively if we had more teaching beds. In this connection it is interesting to note that Corrigan had only six beds in the Jervis Street hospital and he gave us a description of aortic incompetence that we have not been able to improve on.

He was admitted a Fellow of the Royal College of Surgeons of England on answering one question in the affirmative—"Are you the author of the paper 'Permanent Patency of the Mouth of the Aorta'?"

Corrigan entered Parliament in 1876 and became enthusiastic over temperance reform, surprising in an Irishman, advocating the Sunday closing of "Pubs" in Dublin. He was not a success in Parliament and was not re-elected.

William Stokes

William Stokes was born in Dublin, the son of Whitley Stokes who preceded him as Regius Professor of Medicine at Trinity College. Stokes took his early medical training at Meath Hospital and it was here that he came under the influence

of Graves. From Dublin he went to Glasgow where he spent two years and later to Edinburgh where he obtained a degree in medicine. At Edinburgh he came under the influence of Professor Alison to whom he pays a warm tribute for his humanizing influence.

Laennec in 1819 had just published his monumental work on diseases of the chest. In it he gave a glowing account of the value of the wooden stethoscope which he had devised. Like all new things in an old world, the value of Laennec's stethoscope was slow to be recognized. Hodgkin of Guy's Hospital, however, spent some time with Laennec at the Necker Hospital in France in 1822 and in the same year gave a paper on "The Application of the Stethoscope" before the Guy's Physical Society.

Stokes, who was then an undergraduate student at Edinburgh, must have read Laennec's book, because in 1825, while still only 21 years of age, he published a small treatise on the use of the stethoscope. For this he received 70 pounds. This publication had a wide circulation in the English speaking medical world and did much to popularize auscultation in England, Scotland and Ireland.

In 1825 Stokes returned to Dublin and was given a position on the Meath Hospital as a colleague of Graves. For many years Graves and Stokes worked together assisting each other in clinical researches and in the initiation of a new system of clinical instruction which was to make the Dublin School of Medicine famous. As well as being colleagues, they were life-long friends.

Stokes was a remarkable teacher and is said to have given unstinted time to the preparation of his lectures. He must have been an arduous worker as judged by the following excerpt from one of his letters.—"I rise early, write till breakfast, then go to the dispensary where I sit in judgment on disease for an hour, then to the hospital, where I go round the wards attended by a crowd of pupils; from the hospital I return home, write again until two, and then go round and visit my patients through different parts of the town, attended by a pupil."—Surely a full day. Stokes' comments on the poverty and destitution of many of his patients shows the human touch. Acland of Oxford describes him as "the physician of the poor."

In 1832 cholera devastated Ireland and to Stokes must go the credit for describing the first case, and identifying the disease in Ireland.

From 1832 on Stokes wrote a good deal. In 1834 he became editor of the Dublin Journal of Medicine and Clinical Science. In the following year he published his book on "Diseases of the Chest." In this text-book he elaborated on Laennec's teaching and corrected some of the

great master's errors. He stressed the importance of the evaluation of chest symptoms as well as signs. Laennec was more inclined to emphasize the objective examination. He contributed many papers to the Dublin Quarterly Journal of Medicine on diseases of the heart and in 1854 published his book on "Diseases of the Heart and Aorta." One is interested to note in this volume that he draws a distinction between functional and organic heart murmurs. This teaching was largely forgotten until re-emphasized by Sir James MacKenzie in our own generation. He also recognized and described paroxysmal tachycardia.

In 1845 he succeeded his father as Regius Professor of Medicine at Trinity College and devoted most of his time to raising the standards of medical teaching.

In 1874 he published his "Lectures on Fever," in which he champions the principles of therapy laid down by Graves.

Honors came to him in his later years. He was given the degrees of D.C.L., Oxford and L.L.D., Cambridge. He held the office of President of the Royal Irish Academy and President of the British Medical Association, was made a Fellow of the Royal Society and a member of the Prussian Order "Pour la Merite."

In spite of his active academic and professional life he found time to study geology and the fine arts.

Francis Rynd (1801 - 1861)

Rynd is not often heard of, but he made one valuable contribution to medicine. He introduced the hypodermic method of medication by using a gravity method. He used a solution of morphia in creosote which he gave subcutaneously for the relief of pain.

This, then, is the story of the Golden Age of Irish Medicine. It is the story of a phase of medical development which has made itself felt wherever medicine is taught or practised. The introduction of bedside teaching into English speaking medical schools, and the rational treatment of fever, we owe largely to Graves. The popularization of auscultation and percussion in chest disease we owe largely to Stokes. The names and contributions of the men of the Dublin School are woven firmly into medicine as we know it today.

So long as medicine is practised physicians will bring babies into the world under Colles' Law. They will be called on to give potassium iodide, as introduced by Wallace, to some of the parents of such babies, when they show the Corrigan's sign of expansile tumor in the chest. A few of such patients will show a Corrigan's pulse of aortic incompetence. A few may show the Stokes-Adams syndrome from heart-block or

angina pectoris from syphilitic aortitis. Physicians will always be called on to treat congestive heart failure. Some of these patients will show Cheyne-

Stokes breathing. Francis Rynd's method of subcutaneous medication, using thiomerin or morphine, may be used to relieve their symptoms.

A Milestone

D. L. Scott, M.D.

Assistant Medical Director and Medical Superintendent, Preventive Services



Former Patients Homeward Bound

It has been stated that Canadians are in a preferred position in the world of today. An important example of this was recently impressed on the writer at a meeting of the Medical Advisory Committee of the Sanatorium Board of Manitoba. At this meeting it was suggested that we in Manitoba could possibly afford to dispense with the use of the 125 tuberculosis beds in the King Edward Memorial Hospital in Winnipeg and allocate them to some other use.

In 1907 when the "Board of Health" in Manitoba conceived the idea of building a sanatorium for the treatment of tuberculosis, the disease was so prevalent and the death rate so high that there was an almost hopeless attitude toward its cure and prevention. In spite of this, the Manitoba Sanatorium at Ninette was planned, built and officially opened on May 20, 1910, through the combined efforts of the Board of Health, the medical profession and the contributions in money of the citizens of this province.

At that time, and for many years thereafter, tuberculosis caused more deaths every year than any other known disease, more deaths in the Northern Hemisphere than all other infectious diseases combined. Besides these deaths, innumerable people continued to suffer from this disabling disease and were unable to take their proper place in society. The disability, and hence the economic loss, caused by tuberculosis in any one of those years is incalculable.



E. L. Drewery, Chief Justice Howell, and W. F. Alloway on the hot day when the Ninette site was inspected in 1907.

The first complete annual report presented by the late Dr. D. A. Stewart in 1911 revealed that 438 people died of tuberculosis. It is likely that many more died of the disease unknown to Vital Statisticians, for this was before the common use of X-ray. The population in 1911 was 455,614. From 1911 until about 1935 the rate of death remained about the same, there being 432 deaths in 1935. Then a slow but steady decline in mortality became evident, an outstanding tribute to the anti-tuberculosis effort and to treatment. Earlier detection—less infection—more cures!

The population of Manitoba has increased to its present figure of approximately 795,000 and if the 1911 death rate had continued there would have been 762 deaths from tuberculosis in 1953! Instead of this terrible toll, only 90 people of both Indian and white populations died in Manitoba last year—a truly remarkable accomplishment; indeed, an accomplishment that is not only Manitoba's but is becoming a commonplace in the western or New World. Unfortunately, in some other areas this idealistic state has not yet been reached but we now know how to do it.

Manitoba's position in regard to this dread disease is to be envied. One only wishes that those far-seeing citizens of the Manitoba of 1907 could be aware of the results of the great work they started with their onslaught on this "hopeless" disease. Surely a milestone has been reached!

Medico-Legal

Principles and Practice of Disability Evaluation

Dr. D. J. Fraser

Chief Medical Officer, Workmen's Compensation Board

The principle of remuneration for disabilities probably originated in Europe, evolved to aid soldiers who were disabled due to war service. Following the adoption of workmen's compensation laws, and the sale of private insurance for accidents some schedule of rating of disabilities and payments became necessary. Today there are probably hundreds of such schedules in use throughout the world with marked lack of uniformity indicating that they have little scientific foundation.

To have a scale at all, of course, one must assume that there is such a thing as an average individual; e.g. in one of the United States they consider such an individual to be an untrained laborer, age thirty-nine; but then what two untrained laborers of age thirty-nine are even remotely similar, or are affected in any way near equal by similar handicaps? There are many factors that could enter into the estimation of permanent disability; age, mentality, environment, training, motivation, earnings, etc.; that we are sometimes disposed to feel that the injury itself is the least important of any, yet it is the one factor that is common to all, and the factor that can be estimated with some degree of accuracy and uniformity.

In 1921 "Dean" of the Ontario Board reviewed the rating schedules then in existence; he examined two hundred people with permanent disabilities, and reviewed some fourteen hundred reports from claimants who were in receipt of disability pensions. From this study he evolved a schedule which was adopted by the Ontario Board, and with minor variations that schedule has been adopted and is in use today by other boards across Canada.

For many years disability pensions were paid only where there was a subsequent loss of earnings. This discriminated against the man who had enough initiative to re-establish himself, and overcome his handicap. It did not take into account his loss of ability outside of his employment, such as his decreased ability around the home and his increased living costs, nor did this method take into account his reduction in earning capacity, and in his scope of employment. Today disability pensions are paid independent of earnings.

P.P.D. Schedule — (Manitoba)

Arm—at or near shoulder	70%
at elbow	60%
Forearm—lower third	40%

Hand—at wrist	37.5%
Thumb	8%
Index Finger	3.5%
Middle Finger	2.5%
Ring Finger	2%
Little Finger	1.5%
Thigh—at hip	85%
at knee	50%
at mid-leg	40%
all toes	5%

Loss of Movement of Joints

Shoulder—complete	35%
Elbow—at right angle	20%
Wrist	12.5%
Thumb	5%
Hip	35%
Knee	20%
Ankle	15%
Loss of Vision—one eye	16%
Loss of Eye	18%
Hearing—one ear	3%
both ears	30%

This is the schedule we use today as a guide to the estimation of disabilities. Where there is only the loss of a limb or part thereof, the estimation is indicated by the level of amputation and can be arrived at quickly and easily. However, where a man has more than one injury, or where an injury causes loss of movement of a joint or joints the problem becomes more complex, and less exact. In these cases we must have a careful history, reliable and complete reports from the attending surgeons, a complete and painstaking examination, plus an unbiased attitude towards the problem; keeping in mind that one must be fair not only to the workman, but also to the employer who is assessed the cost of the disability. Justice is an extremely difficult commodity to dispense, and the physician who attempts the estimation of disability has a thankless job.

The complexity of this problem might be indicated by the fact that complete textbooks have been written on disability evaluation and one has been written on the estimation of disabilities in the limbs alone. These authors endeavor in a large measure to reduce estimation of disabilities to a mathematical basis. However, we believe that an estimation based on thorough examination, good judgment and experience is wholly as valuable as one based on the application of mathematical formulae.

It is necessary that the examining physician confine his rating to an anatomical and functional basis. The monetary value of an award should have no bearing on his estimation of percentage of disability. Variation due to other factors such as age, occupation, employability, etc., are better

judged by the administrative board.

Head injuries, back injuries, aggravation by injury to pre-existing disease are problems where the schedule gives little, if any help. In these cases we call on the Medical Board for advice, where three opinions are thought to be better than one. In these particular cases such factors as neurosis, malingering, pain threshold of the individual, etc., may be taken into consideration. The complaint of pain does not in itself constitute a disability unless there are physical findings sufficient to justify.

It might be of interest to indicate the cost of an accident producing a permanent disability. The following is a case from our files: A young man, age twenty-three, lost left leg below knee in

July, 1950. His medical and hospital costs were all paid; he was given an artificial leg, and paid full compensation (66 2/3%) of earnings to May 15th, 1951, and since then he has been on his pension of 40%; a new artificial leg was supplied in December, 1952. Medical costs to date—\$1,502.39. Compensation to May, 1951—\$1,153.23. Capital cost to pay pension for life on his weekly wage of \$47.42 is \$15,618.00. We will continue to keep his artificial leg in good repair and, if necessary, replace it with a new one. We will pay any medical costs if stump breaks down, and, of course, if he loses time due to this disability he would be restored to full compensation. No payment is made for pain and suffering. His pension is \$54.80 a month—payable for life.

Book Review



The Fundamentals of Neurology

Chandler Elliott's "Textbook of the Nervous System" is now in its second edition. It has been considerably enlarged both in text and in illustrations and, therefore, is more useful than ever.

It seeks to supply a foundation for clinical neurology and, as that subject is chiefly a matter of anatomy and physiology, the book integrates structure and function so that it furnishes a good approach to the bedside.

The book is really in three parts. The first two may be likened to the low- and the high-powers of a microscope. The first part considers the "Nervous System in Outline." After discussing the Origin and Function of Nerve Cells, the author gives a "Ground Plan of the Central Nervous System." This reduces the nervous system, textually and diagrammatically, to its simplest terms. Then follows "The Development of the Ground Plan" in which the complexities of development are simplified by the diagrams and by what has preceded. "The Suprasegmental Structures," sensory and motor, and "The External and Internal Form of the Human Brain" complete this section which occupies 99 pages.

The bold, simple outline given in the first part is filled in, but not overcrowded, with detail in the second section. The diagrams are numerous, simple and very helpful. The text is clear even to the point of giving the origin and meaning of every technical word that is used. Each chapter is introduced by a paragraph which links the essence of Part One with an outline of what is to follow. The author has done everything possible to remove obstacles to clear comprehension.

The Third Section is an Atlas of fifty full-page plates. On one side is an enlarged photograph and opposite to it a diagrammatic key together with legends. While this must be exceedingly helpful to undergraduate students it is of value to the graduate reader also. The sections are cross, sagittal and coronal. All parts of the central nervous system are so illustrated.

In addition to the three Sections there is a bibliography of fifteen double-column pages and twelve pages of three columns each of Index. There are also two useful Appendices both of which concern themselves with terminology. Now-a-days when medical students have little Latin and no Greek, the learning and the understanding of medical terms is made more difficult. These appendices give the roots of the words used in the text and enough grammatical help so that they can be used properly and with accuracy.

Elliott's approach to the subject is a novel one but it makes learning easier and understanding more readily grasped. Whether one is embarking on the study for the first time or is reviewing it, Elliott's "Textbook" is equally useful. It is not a textbook on clinical neurology but on neuro-anatomy and physiology. The practitioner who wishes to feel at home at the bedside must have a good understanding of structure and function. In the case of neurological disorders Elliott will assist that understanding.

Textbook of the Nervous System: A foundation for clinical neurology, by H. Chandler Elliott, M.A., Ph.D., with an Introduction by Wilder Penfield, M.D. Second Edition, with 158 illustrations and an Atlas of 50 plates. 437 pages. J. B. Lippincott Company, Medical Arts Bldg., Montreal. Price \$9.00.

**The President and Executive Committee of
the Manitoba Medical Association (Manitoba
Division Canadian Medical Association)
regret to announce the death on August 16th
of Doctor John C. Hossack, Editor of the
Manitoba Medical Review 1943 - 1954.**

**The members of the Manitoba Medical
Association extend their deep sympathy to
Mrs. Hossack and the family.**

Editorial

J. C. Hossack, M.D., C.M. (Man.), Editor

Come To The Convention

Judging by the program before us the committee charged with its preparation has done an excellent job. Almost without exception the topics are of every-day importance to practitioners and almost every branch of medicine is considered. Moreover, most of the speakers are from out of town which is a proper thing, because the Convention should be primarily an opportunity for our members to hear, see and meet distinguished authorities from beyond the borders of our Province and Dominion. Our local luminaries have many chances to inform and instruct their fellows, not the least being that afforded by our pages which are always open to them but which, alas, they too seldom seek to enter.

This year there will be some interesting departures from the usual. The idea of starting each day with a motion picture is a good one. It will almost certainly assure the first speaker a good audience. Too often in the past the initiator of the day's proceedings has had the embarrassment of facing many empty chairs.

A second innovation which undoubtedly will be hailed is the introduction of the doctor's personal business into the scientific sessions. Retirement is an important period of life for which planning is necessary if it is to be made comfortable and enjoyable. A panel of experts under the chairmanship of Dr. Richardson will undertake to show us how to find a lot of sugar at the bottom of each of our cups.

It is interesting to compare the titles of the forthcoming papers with those of a decade ago. Professor Manson's lecture on "The Surgery of Acquired Heart Disease and Disease of the Great Vessels" would then have been impossible and proves how justifiable and how beneficent has been the surgeon's bold invasion of the chest. And, ten years ago, almost equally impossible would have been his other lecture on surgery in the jaundiced. Every year it becomes more and more safe to be sick.

There is very much for everyone in this program and not all of it, not much of it indeed, is likely to find its way into these pages. Much as we should like to set all the papers before you in print, modern methods of presentation make that impossible. There was a time when a lecturer had to stimulate the eye through the ear, but today slides and lanterns make vivid oral description no longer necessary. As a result written contributions are hard to come by so much are they dependent for clarity upon visual aids which are costly or difficult to reproduce.

Therefore if you wish to enjoy the benefits of what promises to be a most fruitful meeting, it will be necessary for you to appear in propria persona and we urge you to take the needful measures now to assure your presence.

Manitoba's Medical Men

IX — General Practitioners

Several months ago the General Practitioners' Association requested the Manitoba Medical Association to form a committee to meet with hospital boards in order to discuss any problems that affected these various groups. The president of the Manitoba Medical Association met with a cordial reception when he discussed the proposed liaison committee with several hospital boards and they were in favor of such a committee to establish closer relations between physicians and hospital boards. Accordingly, a "Hospital Mediation Committee," consisting of five members, was elected at the last meeting of the Executive of the Manitoba Medical Association.

In the future, if any general practitioner has a problem or a misunderstanding with any hospital, he will notify the hospital committee of the General Practitioners' Association and the problem will then be turned over to the Hospital Mediation Committee of the Manitoba Medical Association for suitable action.

It is not expected that this Hospital Mediation Committee will have much to do because the doctors of the province have had good relations with the Boards of the hospitals who have been very co-operative. Doctors who engage in general practice have been very fortunate because most hospitals in the province are "open hospitals" and all medical men, general practitioners as well as specialists, have been permitted to take their patients to the hospitals and look after them both medically and surgically. This has undoubtedly raised the standard of practice in the province because a general practitioner has the opportunity to diagnose and treat his patient wherever the best interests of the patient can be served. In many cases, specialist consultations are requested and freely given. The net result of this has been to enlarge considerably the field of practice for the general practitioner, far in excess of that enjoyed by doctors in other provinces. The privilege extended to the general practitioners by the hospital boards has been appreciated and they in turn are not unmindful of the fact that the closest co-operation with the hospitals is necessary in order to assure good medical care for the patient. It is recognized that the welfare of the patient is of paramount importance.

In this province the general practitioners have demonstrated their competence, not only in the field of internal medicine, but also in obstetrics surgery, and other specialist fields. There are large numbers of general practitioners who do all their minor surgery and also appendectomies, herniotomies, pelvic operations and obstetrics. A smaller number do general surgery, including thyroidectomies, cholecystectomies and gastrectomies. The group which has helped to a marked extent in the training of general practitioners is specialists who have worked with them. As a result, there has been the closest co-operation between the medical men of this province.

Doctors with hospital staff appointments, as well as the hospital boards, have to safeguard the interests of the patient and the hospital. Neither of these groups is anxious to place restrictive measures in hospitals on any medical man so long as the patient is getting good medical treatment.

General practitioners or family doctors hope that the present state of affairs will continue in order that they may be able to practice medicine within the limits of their capabilities. Up to the present time the medical needs of the people of this province have been well served.

L. A. Sigurdson, M.D.

Victorian Order of Nurses

May we remind you of a few facts regarding our service?

1. Service is given only under doctor's directions.
2. Only registered nurses are employed by the Order.
3. Calls may come from any source, e.g. the family, a friend, a hospital (indoor or outdoor department) social or welfare agencies, but in all cases the Victorian Order office telephones the doctor for his orders.

4. We nurse all types of patients, medical and surgical, convalescent, chronically ill and aged and maternity patients.

5. Payment for service. The fee is based on the actual cost which is at present \$2.00 per visit. However, adjustments may be made to suit the circumstances of the family. In necessary cases the fee is waived. Any adjustment of the fee is made by the nurse after discussion with the patient or family. Reduction or waiver of fees is made possible by contributions from community agencies.

6. Your contact with the Victorian Order nurse is your telephone. Phone the V.O.N. office when you require part-time nursing care for your patients. Telephone 92-8529.

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Association Page

Reported by M. T. Macfarland, M.D.

Annual Meeting Manitoba Medical Association October 11 - 12 - 13 - 14

The Scientific Programme Committee, under the Chairmanship of Dr. Thomas A. Lebbetter, has invited some outstanding guests to present papers at the forthcoming Annual Meeting.

Dr. G. F. Strong of Vancouver is President of the Canadian Medical Association and President-Elect of the American College of Physicians. He will give a *Presidential Address* on Tuesday, October 12th, and on October 13th he will present a paper *Newer Concepts of the Treatment of Heart Failure*. Dr. Strong is a member of the American Medical Association and the American Board of Internal Medicine. He is a Fellow of the Royal College of Physicians and Surgeons of Canada and Chief of the Department of Medicine at the Vancouver General Hospital. He is Clinical Professor of Medicine at the University of British Columbia.

Two guests from the Canadian Medical Association are travelling with Dr. G. F. Strong, they are Dr. Roger Wilson and Dr. D. S. Munroe, both of Vancouver.

Dr. Roger Wilson is a 1934 graduate of McGill University. Following post-graduate work he spent six and one-half years in the British Army. He is now Clinical Instructor in Surgery at the University of British Columbia, Consulting Surgeon at Shaughnessy Hospital and Attending Staff Surgeon at the Vancouver General Hospital. He will speak on *Benign Oesophageal Obstruction* on October 12th, and *Carcinoma of the Stomach* on October 14th.

Dr. D. S. Munroe is a 1936 graduate of the University of Manitoba. He is a Fellow of the Royal College of Physicians and Surgeons of Canada and a member of the North Pacific Society of Internal Medicine. He will speak on *Diagnosis and Management of Cardiac Arrhythmias*, October 12th, and *The Diagnosis of Lymphadenopathy*, on October 14th.

Dr. J. H. Moore of Grand Forks, North Dakota, has been Clinical Professor of Obstetrics and Gynecology at the University of North Dakota. He took his American Board in Obstetrics and Gynecology and he is a member of the Association of Obstetrics and Gynecology and Abdominal Surgery, also a member of the American College of Surgeons. Dr. Moore will speak on *Obstetric Hemorrhage* on October 12th, and *Office Gynecology* on October 13th.

Eric M. Nanson, F.R.C.S. (Eng.) is the newly appointed Professor of Surgery at the University of Saskatchewan. He graduated from the University of Otago, New Zealand, in 1939 and following military

service he was Nuffield Foundation Travelling Fellow. After a year as Travelling Fellow of the Rockefeller Foundation he was lecturer in Surgery at the University of Bristol and then Associate Professor of Surgery at Johns Hopkins Hospital. He will speak on *Surgery of Acquired Heart Disease and Disease of the Great Vessels* on October 12th and *Surgery of the Jaundiced Patient* on October 14th.

Dr. Richard L. Day is Professor of Paediatrics at New York State College of Medicine. He is a 1931 graduate of Harvard Medical School and a member of the American Paediatric Society. He will speak on *Diseases of the Newborn*, on October 14th.

Dr. A. F. W. Peart, the recently appointed Assistant Secretary of the Canadian Medical Association, will be a luncheon speaker on October 13th. He is a 1940 graduate of Queens University and has a Diploma in Public Health. Following service in the R.C.A.M.C. for which he was awarded the M.B.E. he had experience as chief of the Epidemiology Division of the Department of National Health and Welfare, and as Medical Health Officer in Western Canada.

FILMS

The programme will commence each morning with the presentation of films at 8.30 a.m. Two of the three films were made locally, *The Use of Obstetric Forceps*, by Dr. A. W. Andison, and the *Method of Administration of Parenteral Fluids to Infants and Children*, by Dr. C. H. Read of the Children's Hospital, Winnipeg.

HOW SHOULD A DOCTOR PLAN HIS RETIREMENT AND ESTATE?

A Round Table Conference at which four experts will discuss the above subject is being arranged as an innovation. All doctors and their wives are cordially invited to be present on Tuesday evening, October 12th, from 8-10.30 p.m.

The members of the Conference will include Dr. R. W. Richardson of Winnipeg, Chairman, a Barrister, an investment representative from James Richardson & Sons, a Chartered Life Underwriter from the Great West Life Insurance Company, and a senior Estates Officer from one of the leading Canadian Trust Companies.

These men are well informed and will be pleased to give you their advice in solving your specific problems. There will be opportunity given for questions from the floor following the discussion period, however, it is recommended that you send in questions by mail now to Dr. M. T. Macfarland, Executive Secretary, Manitoba Medical Association, 604 Medical Arts Building, Winnipeg.

Panel Discussion

Tuesday, October 12th, 8.30 p.m.

"How Should a Doctor Plan His Retirement and Estate?"

An innovation is planned for the Annual Meeting this year when a two-hour panel of well-informed persons will discuss the above topic, and answer questions which may be submitted in advance or from the floor. Wives are invited since they have a major role in planning for the future. Light refreshments will be served at the conclusion of the panel.

Participants will be: Dr. R. W. Richardson, Chairman, Committee on Economics, Canadian Medical Association; Robert K. Berry, Trust Officer; Arthur Johnston, Chartered Life Underwriter; S. B. Phipps, Investment Counsellor; Don A. Thompson, Barrister.

Hobby Show

Some of our sister divisions have introduced a Hobby Exhibit at which members of the profession present samples of hobbycraft in which they have a continuing interest. Such an exhibit will be held in connection with the Annual Meeting, October 12-14th.

Dr. Alex M. Goodwin has generously consented to act as Chairman of the Committee and will be pleased to receive suggestions and volunteers. Applications to exhibit in the Hobby Show should be forwarded to the Association Office, 604 Medical Arts Building, and should include name, address and subject of exhibit. Further information will be published in the October issue of the Review.

Letter to the Executive

Report of Group Insurance Committee

The Executive,
The Manitoba Medical Association,
Winnipeg.

Dear Sirs:

In the Annual Report issued by your Group Insurance Committee last year, it was mentioned that investigations into Group Life Insurance were being carried out.

Following a conversation between insurance companies and members of your Committee and in accordance with the instructions issued the Committee by the Executive, we have investigated Group Life and Disability Insurance, and have come to the conclusion that coverage of this type is both feasible and desirable for the doctors of Manitoba. We recognize that it is our responsibility to offer a plan that will be acceptable to as many doctors in this Province as possible.

It is fundamental to recognize at the outset that the feasibility of any group plan is absolutely dependent on a contribution from one of the groups

which includes the majority of doctors in Manitoba—i.e., the C.P. & S., the M.M.A. or finally the M.M.S. This fundamental requisite became apparent from our investigation of the plans submitted by insurance companies who, in all instances, have made it a condition that there must be a contribution by some parent body acting in the role of "employer." In all group insurance plans (life) a situation resembling employer-employee relationship must be established. The body acting as the contributing "employer" must be the administrative and co-ordinating authority in this plan.

It is the considered opinion of your Committee that the Manitoba Medical Service is the body best suited to act in this capacity.

The Scheme

It is proposed to provide \$15,000 life insurance without evidence of insurability to all doctors up to the age of 60, and \$7,500 to those between the ages of 60 and 70, the insurance terminating at 70. For the initial enrollment only those up to the age of 65 will be accepted. Disability insurance of \$15,000 will also be included and will be paid for total and permanent disability suffered prior to the age of 60. The life insurance will be decreased by the amount of disability paid out. Before the plan can become operational 75% of the eligible doctors must enroll.

The Cost

The actual cost will only be determined after all enrollment is complete. The probable cost will be in the neighborhood of 73c per \$1,000 per month for those entering the plan at its inception under the age of 60. This rate will continue until the age of 70. For those entering the plan between the ages of 60 and 65 and who as noted above can only obtain \$7,500 insurance, the cost will be \$2.19 per month per \$1,000.

It is proposed that the M.M.S. contribute 25c per month per doctor which will reduce the cost to the doctor to 48c per \$1,000 per month.

At 73c per \$1,000 per month the cost to the individual doctor for \$15,000 per year is \$131.40. If M.M.S. contributes 25c per \$1,000 per month it will contribute \$45.00 per year per doctor. This will reduce the cost to the doctor to \$86.40. \$45.00 per year per doctor equals approximately \$25,000.00. This represents 0.8% of the amount paid out to the doctors in 1953 (\$3,118,751.00).

Thus by reducing its payments to participating doctors by 8/10 of 1% per year M.M.S. can easily make its contribution. Should this latter recommendation not be feasible it is easily seen that by increasing its contribution to 0.9% sufficient additional funds would be provided to cover expected administrative costs.

By making a contribution of less than 1% of the annual amount paid to doctors, M.M.S. can help them obtain very cheaply over \$8,000,000 of

insurance which it would be impossible to obtain in any other way. For those who are uninsurable the need is obvious; for the remainder the saving is incalculable when one considers the cost of term insurance with disability coverage from the ages of 25 to 60 and of term insurance after the age of 60.

The details of how the money is to be deducted from participating doctors' payments is something which can be worked out satisfactorily between the M.M.S., the M.M.S. Committee headed by Dr. Thorlakson, and your Group Insurance Committee.

In summary then, it is apparent that we are unable to obtain a group insurance plan from any Company without a contributory element of some parent body.

The amount of contribution was decided upon by the need for making our plan competitive with term insurance that the young doctor can buy on the open market. The maximum participation by the younger doctors in this plan, or in any group

plan, is so obviously essential as to require no further comment.

This brief is submitted to the Executive of the Manitoba Medical Association in order that we may have endorsement of our recommendation. After this has been forthcoming, negotiations with the Manitoba Medical Service board will be undertaken.

Respectfully submitted,

L. R. Rabson, M.D.,
Chairman

The above report was approved in principle by the Executive Committee of the Manitoba Medical Association on March 16, 1954.

Addendum

Since this report has been issued, this brief has been accepted in principle by the Manitoba Medical Service, and a committee of that organization is now pursuing this matter to what we hope will be its early implementation.

Election of Officers and Executive Committee

Article 11 of the Constitution and By-laws reads as follows:

"The President, First and Second Vice-Presidents, Honorary Secretary, and Honorary Treasurer, and the additional members of the Executive Committee, unless otherwise provided in this constitution, shall be elected at the business session of each Annual Meeting. They shall be elected from nominations, one or more for each office, to be submitted by the Nominating Committee to the Executive Committee and published in the Association Review at least one month before the Annual Meeting, and from such other nominations as may be made from the floor at the business session of the Annual Meeting."

President—Dr. R. W. Whetter, Steinbach.

First Vice-President—Dr. R. Lyons, Winnipeg.

Second Vice-President—Dr. G. H. Hamlin, Portage la Prairie.

Dr. J. E. Hudson, Hamiota.

Honorary Secretary—Dr. H. W. C. North, Carman.

Honorary Treasurer—Dr. Jack McKenty, Winnipeg.

Rural Member at Large (three years)—

Dr. R. H. Harris, Virden.

Dr. M. Potoski, Dauphin.

Winnipeg Member at Large (three years)—

Dr. A. B. Houston.

Dr. R. A. Macpherson.

Northern District Medical Society

A meeting of the Northern District Medical Society was held at Dauphin on Thursday, May 20th, 1954, and was attended by some members of the Brandon and District Medical Association.

Following a reception in the nurses' sitting room of the General Hospital, a delicious dinner

was served under the supervision of the matron, Miss Pearson, and the hospital dietitian. The business meeting and Scientific Programme were held in the auditorium of the Health Unit.

Present were: Dr. T. F. Malcolm (President), Swan River; Dr. M. Potoski (Secretary), Dauphin; Dr. S. M. K. Brandt, R. E. Dicks, H. Little, W. G. Ritchie, B. Symchych, J. M. Woods, C. G. Wright, from Dauphin; Dr. W. J. Sharman, Clanwilliam, Manitoba, President Brandon and District Medical Association; Dr. V. J. Sharpe, Secretary, and Dr. J. B. Baker, Past President of the Brandon and District Medical Association, from Brandon; M. Hokanson, Ethelbert; B. Jonsson, Benito; T. E. Kinash, Gilbert Plains; M. Tanasichuk, Grandview; E. Otke, Roblin; Elsie I. Barr, McCreary, Manitoba; Dr. A. E. Rodin, Minitonas; M. Kosakiewicz, Swan River; W. Bashucky, Winnipegosis; Dr. A. T. Gowron, Dr. M. T. Macfarland, Dr. J. E. Morris, Dr. W. F. Tisdale, Winnipeg.

The business session included the reading of minutes of the previous meeting, greetings from the M.M.A. by the President, Dr. W. F. Tisdale, and the Executive Secretary, Dr. M. T. Macfarland, and introduction of the President, Secretary, and past president, Brandon and District Medical Association.

The Scientific Programme consisted of two papers, Dr. A. T. Gowron, Winnipeg, who spoke on "Varicose Veins," and Dr. J. E. Morris, Winnipeg, who spoke on "Medical Aspects of Thyroid Disease." Each paper was very practical, and was followed by extensive discussion.

Following adjournment of the meeting, members were entertained at the home of the secretary, Dr. M. Potoski.

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Brandon and District Medical Association

The spring meeting of the Brandon and District Medical Association was held at Brandon on Wednesday, June 9th.

During the afternoon a golf tournament was held and a pleasant time was reported by the devotees of the game.

Following a reception, dinner was served in the Prince Edward Hotel when a representative group of doctors and wives was present.

At the Scientific Programme which followed dinner the following doctors were present: W. Sharman, President, Clanwilliam; V. J. H. Sharp, Secretary, Brandon; R. J. Cromarty, H. S. Evans, J. A. Findlay, F. Fjeldsted, W. P. Hirsch, R. O. McDiarmid, H. M. McIntyre, C. M. McLean, F. E. Purdie, H. S. Sharpe, E. J. Skafel, W. K. Hames, Kenton; J. E. Hudson, Hamiota; N. M. Kester, Wawanesa; W. H. Patterson, Carberry; Major A. Sartorelli, Rivers; M. T. Macfarland, L. R. Rabson, A. E. Thomson, W. F. Tisdale, Winnipeg.

Following the business session at which approval was given to the talk of field trials of the Salk Polio vaccine, Dr. L. R. Rabson, Winnipeg, spoke on "Surgery in the Aged" which was amply illustrated with slides and Dr. A. E. Thomson, Winnipeg, spoke on "Use of Drugs in Hypertension." Each paper evoked considerable discussion.

Doctors Tisdale and Macfarland brought greetings from the association and Dr. Rabson outlined briefly the study which had been made concerning the provision of term insurance with total disability clause included.

Following the meeting, coffee was served and members were entertained at the home of Doctor and Mrs. R. O. McDiarmid.

Northwest District Medical Society

Meeting of the Northwest District Medical Society was held at the Clinic Building, Virden, at 8 p.m. on Thursday, June 24th, 1954.

Present: Doctors D. S. Bruce, Elkhorn; J. E. Hudson, Hamiota; W. K. Hames, Kenton; S. Bjornson, Miniota; A. Sartorelli, Rivers; G. I. Wortzman, Rivers; J. A. Dupont, Virden; R. S. Harris, Virden; J. R. Monteith, Virden; J. R. Taylor, Winnipeg; W. A. McAlpine, Winnipeg; M. T. Macfarland, Winnipeg.

Dr. J. E. Hudson acted as Chairman and gave a comprehensive review of the recent annual meeting of the Canadian Medical Association which was held in Vancouver, June 14th to 18th.

The Scientific Programme consisted of papers by Dr. W. A. McAlpine, Winnipeg, who spoke on "Thoracic Surgery" and Dr. J. R. Taylor, Winnipeg, who spoke on "Management of Urinary Tract Infections." Following the papers there was an interesting discussion, and the meeting concluded with a social hour.



Winnipeg Medical Society—Notice Board

A. R. Birt, Vice-President
Dwight Parkinson, Trustee

Hartley Smith, President

D. L. Kippen, Treasurer
A. W. McCulloch, Secretary

The Annual Meeting

Thirteen years ago when I had the honour of presiding over this Society I placed in the "Review" each month a contribution which I called the "Notice Board." Upon this I posted information about past and future meetings and such other items as were likely to be of interest. My purpose in so doing was to attract the largest possible audiences to our meetings and this I succeeded in doing.

For close upon a decade now the Notice Board has, metaphorically, been gathering dust. This I have removed and now I set it up again so that you may read upon it the story of what happened on the twentieth of May.

That was the date of the Annual Meeting, but earlier in the evening there was a gathering of the APPOTWMS—the first in recorded history. What, you ask, is or are APPOTWMS? They are the Associated Past Presidents of the Winnipeg Medical Society. The name was not accepted without demur. One (youthful) member suggested referring to the group as the P.P.'s. This brought forth a chorus of "No's" from the more elderly members who felt that this was being altogether too personal. No one had a better idea and so the name of this august body remains (quite unofficially) "The Appotwms."

The idea that such a body should be created was born in the fertile brain of Art Childe who was that evening the I.P.P. or Immediate Past President who automatically presides at the dinner. Of the forty-one who have held office since 1913 24 are still living and of them sixteen were in attendance. Several others had engagements in and out of the city and could not come. One, Dr. Wadge, is laid aside by illness and there was much regret that this old stalwart could not attend.

After reminiscing and dining and a little wining we adjourned to the college. Usually annual meetings bring out a most disappointing audience—disappointing, that is, from the standpoint of numbers. It should actually be the best attended meeting of the year because it is the President's Night and being present is one way for the members to show that they appreciate his good work.

Only those who have filled the chair know how much the honour is cherished; how determined each one is to make his year outstanding, and how eager he is to justify the confidence of those by whom he was elected. And one feels that he has not quite succeeded when many seats are

empty. On this occasion the attendance seemed to be better than usual which is a tribute to Dave Swartz.

When the meeting had been called to order our first action was to remember the dead. We stood in silence with bowed heads while the objects of our thoughts passed before us in shadowy review, each halting for a moment before he passed into the thickening mists of oblivion. A year ago they had stood as we stood now, and already those whom we and they so honoured are being forgotten.

Gentle, pleasant Dr. Coad, honest and thorough to a fault, smiled his farewell. John McEachern, so lately one of us, gave his familiar wink. Rudolf Claassen, an abler man than his modesty would admit, waved goodbye. The other vision was to me formless and faceless for I never knew him, but there were others who called Frank Chown their friend. We thought about them, each in the circumstances that most clung to our memories. Then the gavel fell and we sat down. Requiescat in pace.

The first order of business was the hearing of Committee Reports. But we were spared this. Earlier in the year Gerard Allison suggested that these reports be printed and distributed before the meeting so that everyone would have opportunity to study them. Each report was accepted quickly and without comment. What formerly occupied close upon an hour was thus disposed of in minutes. (Gerard, for this relief much thanks).

Now, I had had these reports before me for several days and again at the meeting but it was not until later that I read, in particular, the Report of the Trustees. And when I saw perpetrated again an egregious and shocking error which I have on more than one occasion pointed out and stressed. This is the attributing to me the gift of our gavel. That this important and serious blunder may be corrected let me recount the circumstances surrounding that gift.

During my term as President we had the privilege of entertaining a most distinguished visitor in the person of Surgeon Rear Admiral Gordon Gordon-Taylor, Senior Vice President of the Royal College of Surgeons of England. He addressed us and at the conclusion of his address I asked him if he would honour us by accepting membership in our Society. This he did.

Later, in private conversation, he told me of the gift he had borne with him to the American College of Surgeons. It was a fragment of the

Hunterian Museum, a piece which had escaped destruction when that priceless collection was almost totally consumed during a German raid in London. I asked him if he would think it presumptuous of me to ask a similar favour for the Society, and he assured me that he would lay my request before the Council of the College. When he returned to London he did not forget his promise and in due time I received the letter printed herewith.

The piece of wood was fashioned into a gavel and later a case was purchased for it. I was, indeed, instrumental in obtaining it but it is the gift of the Royal College of Surgeons of England, obtained for us through the good offices of Mr. Gordon-Taylor. It is a link between his venerable College and our young Society. It is a reminder that ruthless brutality can, in a moment, lay in ruins the results of many years of peaceful labour. It has been licked by those same flames that so nearly destroyed our whole way of life. It is more than a piece of wood—it is a fragment of history.

As for the Rear Admiral, those who met him overseas have told me of his kindness towards, and his interest in, Canadians in general and Manitobans in particular. His actions would lead us to believe that he felt he was one of us. In future, then, let this gift be honoured as it should be honoured.

The reports having been disposed of, the candidates for Life Membership were presented. In this, also, I had a special interest. It had been the established custom to do no more than send a letter informing the member of the honour that had been conferred upon him. Moreover age was a principal criterion.

When I became president I suggested to the executive that other considerations other than age should be regarded and that recipients be given a framed certificate attended by an appropriate ceremony. This was accepted and I was instructed to formulate the rite. So far as memory would serve me there appeared to be little departure from the ceremony as it was then ordered. The immediate past president introduced the candidates. The sponsors advanced their reasons. The president handed to each his memento.

On this occasion four of our colleagues were so honoured and all were worthy of the honour. Donald McIntyre was sponsored by A. T. Mathers, Con. Strong by C. E. Corrigan, N. W. Warner by John Gunn, E. J. Washington by Norman Elvin.

Mostly they bowed their thanks but to Con. Strong a mere "I thank you" was far too feeble an expression of his deep feelings. I recalled the evening when he was elected president. After the result had been announced he sat for a while dazed, or so it seemed. Then getting to his feet

he said (and I remember his words perfectly) "Ladies and gentlemen, I am doubly and triply amazed at the result of this election. Why you have chosen me, I haven't the faintest idea. But you have laid this cross on your own shoulders and now you must bear it. Thank you." Sure never in the history of this or any other society has there been such a speech of acceptance.

But we had no cross to bear. With heart and hand and mind he laboured in our interests with the utmost assiduity. And now, when this other honour was given to him, there was an outpouring of friendliness and gratitude; and everyone thinks, knew why he spoke longer than the others "I thank you" could not empty his full heart.

All this, however, was but "the swelling prologue to the imperial theme"—the President's Address. Upon it, I knew, he had lavished much thought and care as, indeed, all must do who would please their audience and satisfy themselves. He spoke about Canadian doctors who had distinguished themselves in other fields and what he said you can read for yourselves in these pages.

Sallust begins his "Catiline" with the statement that men are partly like the beasts and partly like the gods. And so we are. The burdens we must bear and with which at times we are heavily-laden are no less distressing because they are not physical. But, unlike the animals, we have the god-like power to create, and the exercise of this power gives a sense of well-being and relief that we alone can enjoy. The ability to imagine gives man the power to create, for, as imagination brings forth the form of things unknown, his pen, brush or chisel turns them to shape and gives airy nothing a local habitation and a name.

Thus the author, having conceived his puppets, endows each with a personality, sets them together in a scene of action and, playing the role of Fate, brings them to triumph or disaster. Or the artist may fix in line, in colour, or in stone the picture that he sees about him or holds within his mind. Many doctors have sought the company of the Muses, and some have been so well received by these coy maidens that they are remembered more by that association than by their clinical success.

Courtship of the Muses does not mean divorce from Medicina though that has often followed. Many have proved that wife and mistress can live in harmony under the same roof, and can, indeed, be mutually helpful. When Medicina is a jealous spouse her husband becomes a slave whose life is not his own. Some more restful company is desirable at times, and none but the Muses can so well supply it. Aided by them the creator can create as he pleases, and each new creation gives him fresh pleasure. To doctors in particular the vicarious form of life-giving serves to neutralize their disappointments which, in their case, so often are associated with death. Moreover these won-

are enduring, and each one can say "So long as men can read or eye can see; so long lives this, and this gives life to me."

Dave's address was interesting and was pleasantly delivered. When he had finished he performed the penultimate act of his reign and announced the victors in the election. Our new officers are: President, Hartley Smith; Vice-President, A. R. Birt; Secretary, A. W. McCulloch; Treasurer, D. L. Kippen; Trustee, Dwight Parkinson.

Then he handed the emblem of his authority to his successor and the new president adjourned the meeting. Dave Swartz is now eligible to append his name the initials M.A.P.P.O.T.W.M.S. Three cheers for the Appotwms! Three cheers for the society!

* * *

At the hotel where we Appotwms dined I saw notice to the effect that the Manitoba Association of Funeral Directors were holding that evening their annual dinner and dance. I was tempted to intrude upon their proceedings. Imagination refused to body forth the form of this particular thing unknown. I had no means of entree. I have spent the best days of my life in efforts to keep people out of the hands of undertakers and therefore I would not be welcome. Were I to disguise myself as a corpse I should be welcome enough but I shuddered at what would then be my fate.

An hotel attendant told me this was usually the liveliest affair of the year. There would undoubtedly be a summoning-up of spirits—not those of the deceased whom they had embalmed but of Mr. Seagram and John and Hiram Walker and such like. I expected that the Dance Macabre would place on the programme and felt sure that the younger members of the fraternity played corpse and robbers. I wonder what it would be like to spend an evening in such a necrophiliac atmosphere? On the whole a meeting of the Appotwms is more to my taste.

The Winnipeg Medical Society

The annual business meeting was held in the Medical College on the 14th of May, 1954. This was unusually well attended for an annual meeting, which should have been very gratifying to the executive.

The first item of business consisted in dispensing with the minutes of the previous annual meeting without reading them. Next, copies of committee and other reports were distributed. The meeting was then informed that it was to consider that the signatories of these reports had moved their adoption, and in each instance a seconder was found and each report adopted, and so this

aspect of the Society's business was completed in a few moments rather than taking an hour or so as it usually had at the previous meetings.

At this meeting, four life memberships were granted: To Dr. D. F. McIntyre, sponsored by Dr. A. T. Mathers; to Dr. C. M. Strong, sponsored by Dr. C. E. Corrigan; to Dr. N. W. Warner, sponsored by Dr. John Gunn; to Dr. E. J. Washington, sponsored by Dr. Norman Elvin.

The Presidential Address, given by the retiring president, Dr. David Swartz, was entitled "Canadian Doctors Who Have Distinguished Themselves in Other Fields." At the start, Dr. Swartz mentioned the names of a number of men famous throughout the world for their achievements apart from their chosen profession of medicine. The main portion of his address dealt with the many achievements of Canadian doctors in such things as literature, poetry, art and politics. Amongst those especially mentioned were Sir William Osler, Sir Andrew MacPhail, Wilder Penfield, Sir Frederick Banting and many others. In most instances photographs were shown and in all it was a most interesting presentation.

At the end of the meeting the results of the elections of officers was announced for the 1954-55 session. These will be:

President, Dr. Hartley Smith
Vice-President, Dr. A. R. Birt
Secretary, Dr. A. W. McCulloch
Treasurer, Dr. D. L. Kippen
Trustee, Dr. Dwight Parkinson.

Psychiatric Section Meeting

A meeting of the Psychiatric Section of the Manitoba Medical Association was held at Selkirk Mental Hospital on Wednesday, May 26th, 1954.

During the business session the following slate of officers were elected for the coming year:

Chairman, Dr. A. T. Mathers
Vice-Chairman, Dr. C. M. McIntyre
Secretary-Treasurer, Dr. J. L. Asselstine

The business session was followed by a Scientific programme. Dr. W. G. Lamberd presented a paper entitled, "Evaluation of Nicotinic Acid and Metrazol Therapy in Psychoses Associated with the Senium." A second paper, by Dr. R. H. Tavener, was entitled "The Use of a New Drug in Tension States." Both papers were followed by a lively discussion. Dr. G. Sisler gave a brief report on the recent meeting of the American Psychiatric Association in St. Louis.

Dr. and Mrs. E. Johnson entertained the members at a reception. Dinner was served in the new unit of the hospital.

In bacterial diarrheas: bacteriostasis — adsorption protection

Streptomagma provides all the essentials for securing prompt and complete remission of many bacterial diarrheas. To accomplish these ends Streptomagma contains:

- Streptomycin . . . "much more effective against the coliform fecal flora than the sulfonamides . . . not readily absorbable . . . non-irritating to the mucosa"¹
- Pectin . . . "various pectins . . . become bactericidal agents in the gastrointestinal tract when given together with streptomycin"²
- Kaolin . . . for "tremendous surface and high adsorptive power"³
- Alumina gel . . . itself a potent adsorptive, acts as a suspending agent for the Kaolin and enhances its action; soothes and protects the irritated intestinal mucosa.

STREPTOMAGMA

Dihydrostreptomycin sulfate and pectin
with kaolin in alumina gel

1. Pulaski, E. J. and Connell, J. F., Jr.: Bull. U. S. Army M. Dept. 9:265.
2. Woolridge, W. E. and Mast, G. W.: Am. J. Surg. 78:881.
3. Swalm, W. A.: M. Rec. 140:26.



Social News

Reported by K. Borthwick-Leslie, M.D.

New appointments of interest to the Manitoba Medical Staff are: Dr. C. W. Burns has been made Professor Emeritus in Surgery. Drs. M. R. MacCharles and P. H. Thorlakson have been appointed Clinical Professors in Surgery and Dr. H. D. Morse, Associate Professor of Surgery.

As reported via the grapevine previously, Dr. Harry Medovy is now Chairman of the Dept. of Pediatrics, succeeding Dr. Bruce Chown, who is now retired. The very best wishes for success to the new responsibilities to them all.

♦
Dr. Murdoch MacKay (70 years), Transcona, was honored recently at the C.M.A. convention in Vancouver, being installed as a Senior Member of the Canadian Medical Association.

Dr. and Mrs. Murdoch MacKay also announce the engagement of their daughter, Elizabeth Jean, Dr. Robert Nixon, son of the late Mr. and Mrs. S. Nixon. The wedding will take place June 10th in Transcona.

♦
Congratulations are also in order for Dr. John Moorehouse (50) who has been awarded the Sir John Maclean Memorial Diploma for Clinical Research. The award was given this year for Dr. Moorehouse' study on "Abnormal Vasomotor Responses in Diabetic Peripheral Neuropathy."

♦
Dr. Morley Cohen has received a fellowship from the Life Insurance Medical Research Fund to train under Dr. C. Walton Lillehei at the Minnesota Medical School, Minneapolis.

♦
Dr. and Mrs. Harrison Waugh, Lynn Lake, Man., with their children are holidaying at Minaki, Ont., prior to leaving for Montreal where Dr. Waugh will do post graduate work in surgery.

♦
Dr. and Mrs. J. S. McInnes announce the engagement of Donna Marie to Wm. Bruce Parrish. The wedding to take place July 14 in Westminster United Church.

♦
As for my pal Dr. Harold Blondal, Medical Director of the Manitoba Cancer Relief and Research Institute. He both looks and sounds highly scientific, in the Tribune report of his activities—but Harold, must you frown like that? Josephine Cowman, also of the Tribune, will be sending you some of her anti-wrinkle exercises and lotions, if you do. Your article was both interesting and instructive.

♦
The Annual Meeting of the Manitoba Branch of the Federation of Medical Women of Canada, was combined with the Farewell Banquet for the

1954 Medical Women Graduates. Dr. Ida Armstrong very kindly loaned her home for the occasion. Super cocktails, followed by super buffet supper prepared the way for the election of officers, and farewell talk to the girls. Dr. Ellen Taylor was the speaker of the evening, and as always was delightful to listen to.

The new slate of officers will be:
President, Dr. Donna Huggins.
Vice-President, Dr. Leonora Hawirko.
Secretary, Dr. Margaret McGuire.
Treasurer, Dr. Ruth Mathers.

♦
Dr. and Mrs. Frank Stuart dropped in to say "Farewell" last week. I am sorry indeed to see them leave Manitoba and Wildwood, but very happy in their move. Frank has taken over the position of Senior Radiologist in St. Joseph Hospital, Victoria, B.C. They will find many old friends there and will, I hope, find both health and happiness as well.

♦
Dr. Gladys Marie Salisbury (U. of M., 1954), and Dr. Fergus A. Murphy (U. of M., 1952), were married June 3 in St. Ignatius Church. Following a brief honeymoon in the U.S.A. they will take up residence in Humboldt, Sask., working with the Humboldt Clinic.

♦
May 26, Holy Cross Church, Norwood, was the site of the marriage of Iris Joyce Graham and Dr. Ivor Francis Small. The bride is in her third year of medicine, U. of M. and the bridegroom a 1954 graduate. Following a motor trip to the U.S.A. the young couple will reside in Selkirk, Man.

♦
In New York, Dr. Ralph Z. Levene, St. Cross St., Winnipeg, and graduate of M.M.C. and at present Resident Physician in Ophthalmology at Bellevue Hospital, was married to Roslyn Joan Liekler of Brooklyn, New York. Following a trip to the West Indies they will reside in Manhattan.

♦
Welcome to our new Junior arrivals.
Dr. and Mrs. J. H. Battershill are happy to announce the birth of Paul Arthur, June 1, 1954.

♦
Dr. and Mrs. Donald B. Proctor announce the birth of Pamela Leslie, May 28, 1954.

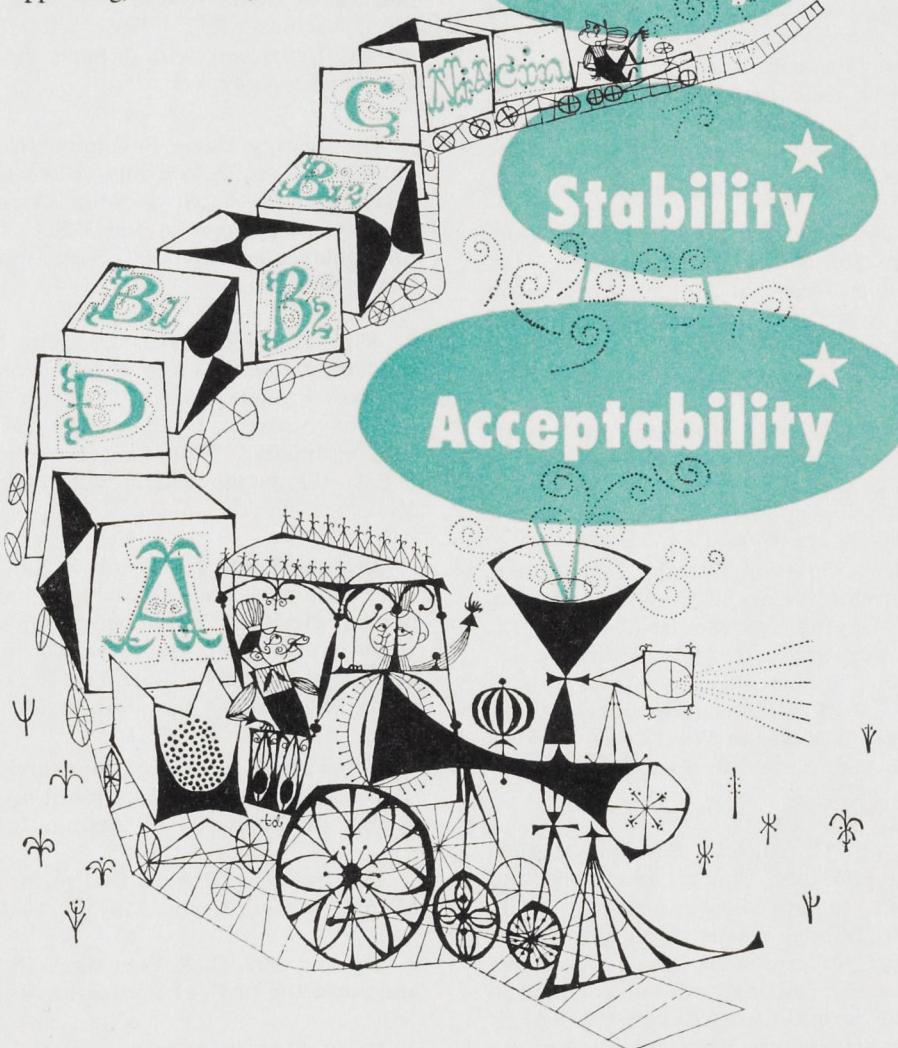
♦
Dr. and Mrs. D. E. Bergsagel, Oxford, England, announce the birth of Paul Knut, June 11, 1954.

♦
Dr. and Mrs. H. N. Colburn announce the arrival of Mary Louise, May 24, 1954, at Norway House, Man.

♦
Dr. and Mrs. John Davies are happy to announce the birth of a son, June 12, 1954.

Pediavite^{E.B.S.}

Pediavite E.B.S. is a new dietary supplement for children . . . and adults. It is a poly-vitamin powder in an appetizing, nutritious, dextrose base.



Department of Health and Public Welfare
Comparisons Communicable Diseases — Manitoba (Whites and Indians)

DISEASES	1954		1953		Total	
	June 13 to July 10, '54	May 16 to July 12, '54	June 14 to July 11, '53	May 17 to June 13, '53	Jan. 1 to July 10, '54	Jan. 1 to July 11, '53
Acute Poliomyelitis	5	7	143	5	40	178
Chickenpox	131	195	102	109	1163	825
Diphtheria			1			4
Diarrhoea and Enteritis, under 1 yr.	11	11	22	15	86	87
Diphtheria Carriers						
Gastroenteritis—Amoebic						
Gastroenteritis—Bacillary	2	1	1	1	14	5
Grippe	2	2	1	1	18	22
Hepatitis						2
Influenza	1	5	12	22	52	183
Measles	82	171	59	94	710	2228
Measles—German		3	2	9	12	35
Meningococcal Meningitis	4	4	3	2	13	25
Smallpox	63	88	69	94	858	764
Ophthalmia Neonatorum						
Suppurative Fever			1			1
Varicella Fever	24	43	20	36	368	265
Viral Sore Throat	1	4	2	2	39	24
Smallpox						
Anus					1	
Anal Fissure						1
Tuberculosis	56	37	112	90	293	606
Cholera	1				3	
Cholera Paratyphoid						
Cholera Carriers						
Convulsant Fever	1		3	1	3	9
Whooping Cough		2	31	10	42	104
Diarrhoea	98	79	104	76	685	589
Syphilis	6	13	13	5	57	50
Infectious Jaundice	26	37	26	22	228	201
Alkalæmia	1			1	1	2

Four-Week Period June 13 to July 10, 1954

DISEASES (White Cases Only)	*809,000 Manitoba	*861,000 Saskatchewan	*3,825,000 Ontario	2,952,000 Minnesota
Approximate population.				
Acute Poliomyelitis	5	3	20	29
Chickenpox	131	116	1126	
Diarrhoea and Enteritis, under 1 yr.	11	5		
Diphtheria			2	
Diphtheria Carriers		1		
Gastroenteritis—Amoebic				3
Gastroenteritis—Bacillary	2	25	16	2
Grippe Epidemic	2	2	1	
Grippe	2	3	5	
Influenza	1		7	3
Infectious Jaundice	26	46	59	204
Measles	82	40	852	393
Human Measles		53	205	
Meningitis Meningococcus	4	2	2	3
Smallpox	63	145	499	
Ophthalmia Neonatal.				
Suppurative Fever				
Varicella Fever	24	27	214	26
Viral Sore Throat	1	33	15	59
Anus		1		
Tuberculosis	56	41	116	124
Scabies				4
Alkalæmia	1			2
Cholera				
Cholera Paratyphoid	1			
Cholera Carriers				
Convulsant Fever	1	2	6	10
Whooping Cough		5	135	52
Malaria				4
Diarrhoea	98		187	
Syphilis	6		70	

DEATHS FROM REPORTABLE DISEASES

June, 1954

Urban—Cancer, 57; Pneumonia, Lobar (490), 1; Pneumonia (other forms), 3; Tuberculosis, 7. Other deaths under 1 year, 17. Other deaths over 1 year, 206. Stillbirths, 14. Total, 237.

Rural—Cancer, 42; Influenza, 1; Pneumonia, Lobar (490), 2; Pneumonia (other forms), 7; Syphilis, 2; Tuberculosis, 2; Septicaemia and Pyaemia, 1; Infectious Hepatitis, 1; Diarrhoea and Enteritis, 2. Other deaths under 1 year, 28. Other deaths over 1 year, 189. Stillbirths, 18. Total, 235.

Indians—Pneumonia (other forms), 2; Tuberculosis, 1. Other deaths under 1 year, 5. Other deaths over 1 year, 6. Stillbirths, 1. Total, 12.

As the Review prints only ten issues in a year and we have thirteen four week periods it has been decided that we will print only the ten latest reports. If anyone of you wish any particular figures we can supply them. It must be remembered that these are only preliminary figures anyway.

Poliomyelitis—At date of writing (July 26th) only 52 cases (causing one death) have been reported. There has been a small epidemic this year at The Pas—six cases to date but two had to be flown to Winnipeg and placed in respirators. The balance of the Province is showing non epidemic incidence. We are not predicting!

Typhoid Fever—The case reported occurred early in the year, but was not reported until now because we were unable to obtain positive cultures. Always take specimens of blood, faeces and urine for examination at the Provincial Laboratory before putting the patients on chloramphenicol.

All other communicable diseases are at low or average levels.

THE PROVINCE OF MANITOBA

requires a

MEDICAL ADMINISTRATIVE OFFICER III

with experience in pathology and bacteriology
for the Hospital for Mental Diseases,
Brandon, Manitoba.

Salary Range: \$7,140.00 - \$7,740.00
per annum.

The above position offers full Civil Service
benefits — liberal sick leave, four weeks'
vacation with pay annually and
pension privileges.

Furnished house and board available to medi-
cal officer and family at the Brandon Hospital
for Mental Diseases at a cost of One Hundred
Dollars per month.

Apply to:

MANITOBA CIVIL SERVICE COMMISSION
247 Legislative Building
Winnipeg, Manitoba

Doctor Required

WANTED: Young doctor to locate in
modern city of 1,000 people in Red River
Valley Community. New clinic building and
financial assistance available. H. M. Nash,
Secretary, Hatton, N.D.

Ophthalmologist Required

Applications are invited for the position
of Consultant Ophthalmologist to the Winni-
peg Municipal Hospitals. Details are available
from the Medical Director. Phone 42-3411.

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247 Balmoral Street, Winnipeg, Man.
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Phones:	Victorian Order of
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Nurses' — 722 151	Sundays and
Registered Nurses.	Holidays,
Practical Nurses.	Phone 722 003

Physiotherapists and Masseuses
—P. BROWNELL, Reg. N., Director.

THE PROVINCE OF MANITOBA

requires

MEDICAL DIRECTORS

for Local Health Units in Manitoba

Applicants must be eligible for registration in
Manitoba. Preference will be given to experi-
enced physicians with post-graduate training
in Public Health of at least one year at an
approved university — but applications will be
accepted from qualified physicians with lesser
qualifications.

SALARY RANGE:

\$5,640.00 - \$7,620.00 per annum, depending
on qualifications and experience.

Full Civil Service benefits — liberal sick leave,
three weeks' vacation annually with pay and
pension privileges.

Apply to:

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247 Legislative Building,
Winnipeg, Manitoba

THE PROVINCE OF MANITOBA

requires a

**QUALIFIED
BACTERIOLOGIST**

for the Provincial Laboratory,
at Winnipeg, Manitoba

SALARY RANGE:

\$6,480 - \$7,080 per annum

Applicants should state age, educational
qualifications and experience.

Apply to:

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Winnipeg, Manitoba